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DESIGN FOR DEVELOPMENT: Niagara (South Ontario) Region


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Phase 1: Analysis

Regional Development Branch

Department of Treasury and Economics

June 2, 1970



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DESIGN FOR DEVELOPMENT:

NIAGARA (SOUTH ONTARIO) DEVELOPMENT REGION

PHASE 1: ANALYSIS

[Technical report]

Ontario

Regional Development Branch
~~Department of~~ Treasury and Economics



Regional Development Branch,
880 Bay Street,
Toronto, Ontario



DEPARTMENT OF TREASURY AND ECONOMICS

PARLIAMENT BUILDINGS
TORONTO

May 27, 1970

Mr. H.I. Macdonald,
Deputy Treasurer of Ontario
and Deputy Minister of Economics,
Chairman, Interdepartmental Advisory
Committee on Regional Development,
Seventh Floor, Frost Building,
Toronto, Ontario.

Dear Mr. Macdonald:

I am pleased to submit to the Interdepartmental Committee on Regional Development the accompanying Report, Design for Development: Niagara (South Ontario) Region. For this Region, the Report contains the analysis phase of our Approach to Plan. The second phase, which will be concerned with policy recommendations, will be completed later in the year.

Research on this Report has benefited substantially from information and recommendations from the South Ontario Economic Development Council and the Niagara Regional Advisory Board. Valuable assistance also has been forthcoming from other sources, especially provincial departments and agencies and, in particular, the Haldimand-Norfolk Study Group associated with the Department of Municipal Affairs.

The findings of the study are respectfully submitted for your consideration.

Yours sincerely,

A handwritten signature in cursive script, reading "Richard S. Thoman".

Richard S. Thoman,
Director,
Regional Development Branch,
Department of Treasury and Economics

Encl.

FOREWORD

This report is the first of a series to be prepared by the Regional Development Branch for Southwestern Ontario. It is concerned with analysis of the Niagara (South Ontario) Development Region's social, economic and physical resources, trends and problems. It should be noted that many of the problems discussed in this Study were first identified by various other government departments and in many cases policies and programs intended to alleviate them have been initiated.

A succeeding Phase II report will recommend planning solutions and development policy for meeting the needs which have been identified. Similar studies will be carried out for the other development regions in Southwestern Ontario - Midwestern Ontario, Lake Erie and St. Clair - as well as for the rest of the Province.

Because of the impact of industrial development in the Nanticoke area, a special study of Haldimand and Norfolk counties is being prepared by the Department of Municipal Affairs. In order to ensure complete coordination between the two studies, the geographic coverage of this Report has been extended to include Norfolk County. Since Norfolk is a component of the Lake Erie Development Region, it will also be included in a study of the latter Region, to follow.

This study required the cooperation and assistance of a great number of organizations and individuals. Particular thanks are due to: the South Ontario Economic Development Council, the

Niagara Region Advisory Board, the Haldimand-Norfolk Study Group, the Niagara Escarpment Study Group, members of the business community, Industrial Commissioners, Planning Boards, Town Clerks, Canada Manpower Centre personnel, members of the academic community and various government departments. Special thanks are due to the Ontario Statistical Centre.

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SUMMARY

Three major trends are evident in the Niagara Region. First, the Region is, and will continue to be an area of growth; second, activity is currently concentrated in the northern portions of the Region; and third, there is a strong probability of a future extension of regional activity along the Lake Erie shoreline.

Growth Patterns The Niagara Region had a 1966 population of approximately 945,000 people. This constituted about 14 per cent of the provincial population and represented a gross regional density of 338 persons per square mile. In terms of both total population and regional density, Niagara ranked second of the ten development regions in Ontario.

In terms of population growth, the Region has also performed very well. During the 1951-1966 and 1961-1966 periods for example, it grew by 49 per cent and 10 per cent, respectively, making it one of the fastest growing regions in the Province, as it has been for over a century.

The sustained regional growth can be attributed in large part to three general factors: the Region's favourable location in the large Central Ontario market area, its proximity

to the United States, and the presence of a combination of unique natural resources including tender fruit soils, tourist attractions such as Niagara Falls, and structural materials, some of which have continued to be marketable during the past one hundred years.

It is generally agreed that all these factors will continue to affect activity in Niagara during the foreseeable future. However, it seems evident that the locational factor has become the most critical of these general determinants of regional growth. This is implied very strongly in the works of such different regional scholars as Jean Gottman and Constantinos Doxiadis, both of whom view the Niagara Region as being an integral spatial component in the emerging Great Lakes - St. Lawrence Megalopolis.

Growth Concentrations Regional development in Niagara has not been evenly distributed. Rather, it has been overwhelmingly concentrated in a narrow arc of land stretching from about Brantford in the northwest, to St. Catharines and Niagara Falls in the southeast. The northern and southern boundaries of this arc are for the most part defined by the southern shore of Lake Ontario and the northern slopes of the Niagara Escarpment.

Contained within this arc are the six major regional urban centres of Brantford, Burlington, Hamilton, Niagara Falls, St. Catharines and Welland, which together comprise 65 per cent of the regional population and account for a large proportion of the Region's secondary and tertiary economic activity.

A similar pattern of concentration exists with respect to the distribution of educational, health, and cultural facilities such as libraries and museums. These facilities tend to be concentrated in the larger urban centres identified above and hence are relatively inaccessible to persons living in the southern and central portions of the Region.

The rural portions of this arc contain the specialized fruit growing zone as well as many of the Region's workable non-metallic mineral deposits.

Located in this arc also, is the Region's primary inter and intra-regional highway spine, the Queen Elizabeth Way, and traversing it is the Welland Canal which, along with the St. Lawrence Seaway provides international water access to the ports of the Upper Great Lakes.

The irony of the concentration process which has

occurred in the arc is that while it has produced many economies of scale which have benefitted the residents of the Region, it has, at the same time, created diseconomies which have lead in turn to many of the problems associated with the Region.

Examples of benefits derived from the concentration of activities are the high income levels enjoyed by the residents of the area, as well as the generally high calibre of its educational, health and cultural facilities in the northern portion.

Examples of diseconomies are to be found in the process of "rurbanization" which has already eroded much of the productive acreage of the fruit growing zone, the defacement of the Niagara Escarpment through the extraction of mineral deposits, and the general pollution of the area's water bodies.

Southern Extension of Regional Development The activities of Stelco in the Port Dover area, Texaco at Nanticoke and the proposed location of Dofasco in the Port Burwell area are indications of the demand for industrial land in the southern portion of the Region, along the Lake Erie shoreline.^{1,2}

¹Haldimand-Norfolk Study, Towards a Land Use Plan for Haldimand-Norfolk, Ontario Department of Municipal Affairs, March 1970.

²A Strategy for Southwestern Ontario Development, A joint statement by the Department of Treasury and Economics and the Department of Municipal Affairs, March 17, 1970.

When the shoreline is analysed in terms of its locational factors with respect to the emerging Great Lakes Megalopolis, it becomes apparent that whether or not these particular developments do occur in the future, development pressures for industrial location in this portion of the Region will come to equal those which have been felt in the northern portion of the Region.

Problem Identification

Five general categories of regional problems have been identified and are discussed below: problems associated with the economic base, tourism and service problems, transportation problems, land use problems, environmental problems and social problems.

A. Economic Base

The four most important sectors of the economy are: manufacturing, agriculture, mining and tourism.

Manufacturing

1. There is a high proportion of slow growth industries in the Region, particularly in Brant, Lincoln and Welland counties.

2. The economic base of Haldimand and Norfolk counties lacks diversity.
3. At the time of the survey, there was a reported shortage of skilled labour throughout the Region.
4. The presence of several high-wage requirement industries such as farm machinery manufacturers, particularly in Brant and Lincoln counties, has created labour-recruitment problems for many other industries. This is especially true of medium-size establishments which are prepared to pay a moderate wage for semi-skilled and skilled labour, and industries whose operations require low-wage, unskilled labour.
5. The loss of power-rate (electric) advantages, increasing transport costs and rising labour costs are causing a spatial shift in industrial location away from the eastern portions of the Region. Many of the firms interviewed in Lincoln and Welland counties indicated that their original reasons for locating there no longer obtain.

6. In general there is a reasonable amount of land available for industrial expansion in the Region. However there are areas that are at present experiencing a shortage of serviced land.

Agriculture

1. The fruit growing industry is faced with a number of problems which together constitute a serious threat to its continued existence. Principal among the problems are a) fruit growing costs are rising faster than product prices, and b) potential profits from sub-dividing are often higher than those which can be derived from working the land. The combination of these factors is resulting in a yearly reduction in the amount of land remaining in fruit growing.
2. The future of the tobacco industry is uncertain.
3. Land with high agricultural capability in

Haldimand County is not being used to its full potential.

Mining

1. In some areas the Region's mineral and natural gas reserves are being depleted rapidly. Alternative sources of employment and income will have to be found for workers engaged in the extraction of these resources.

Tourism and Service

1. There is a lack of co-ordinated development of public and private services and facilities.
2. There is a serious problem of road congestion at Niagara Falls.
3. Areas having prime recreational potential have been generally under-utilized and poorly managed. These areas are to be found throughout the Region and include the Niagara Escarpment, the Lake Erie and Lake Ontario shorelines, and the Grand River Valley.

B. Transportation

1. There is a general congestion along the Queen Elizabeth Way which has reduced regional road accessibility. Critical pressure points are located at or near Hamilton, St. Catharines and Niagara Falls.
2. Existing road, rail and harbour facilities serving the Nanticoke area are inadequate.
3. Accessibility to areas of high recreational use and potential, including the Escarpment and the shoreline of Lake Erie is inadequate to meet future demands.
4. The Welland Canal is reaching a level of high user congestion. Inadequate road crossings of the Canal have created road traffic congestion at some places.
5. Facilities at and accessibility to Hamilton Harbour are inadequate.

C. Land Use

1. Pressure of urbanization around the Region's cities is resulting in the deterioration of the rural landscape. Areas of particular concern are the Hamilton-Burlington-St. Catharines Corridor and the St. Catharines-Niagara Falls-Port Colborne triangle.
2. The use of land adjacent to the Welland Canal has been unco-ordinated and has resulted in the creation of an unsightly development corridor.
3. Unsightly, uneconomical strip development has occurred along the shorelines of both Lake Ontario and Lake Erie.
4. The Niagara Escarpment has been defaced unnecessarily in places by mining activities.

D. Environmental

1. The chemical pollution of the Region's air space and its water resources has been extensive. Air pollution has been especially

serious in Hamilton, Burlington and Dunnville areas. The potential for air pollution resulting from industrial developments in the Nanticoke area merits serious consideration. Water pollution has reached serious levels in both Lakes Ontario and Erie, the Niagara River, the Grand River, the Welland Canal and in many of the Region's smaller creeks.

2. The unco-ordinated alignments of regional public utilities have detracted needlessly from the Region's scenic resources.

E. Social

1. There are relatively limited educational, health, cultural and social amenities in the central and southern portions of the Region.
2. Both native Indian and immigrant groups have benefitted from the Region's economic and social advantages less than has the rest of the regional community.

CHAPTER I

INTRODUCTION

The Regional Development Program

Few truly fundamental evolutionary changes take place overnight. The process of regionalizing coordinated provincial government response to local needs had its beginning five years ago in January, 1965, when the Province and the Federal Government jointly sponsored a Conference on Areas of Economic Stress in Canada at Queen's University, Kingston. One month later, the Province was host to a major International Conference on Regional Development and Economic Change.

In the Spring of 1966, the Provincial Government tabled its White Paper, Design for Development. This document set forth, in its philosophy of inter-regional equity, interdepartmental coordination and inter-governmental partnership, what was to become basic governmental policy for Ontario's emerging regional development program. In December 1968, a second White Paper, Design for Development, Phase II, outlined the Government's objectives for the parallel program of reorganizing the existing structure of local governments into larger and more effective regional government units.

These two White Papers and subsequent Cabinet announcements have detailed certain fundamental regional development policies. These are:

1. That the vital role of the private sector be recognized, that its contribution to the provincial economy be continuously assessed in view of provincial needs and resources, and that provincial policies be formed to encourage a rational expansion of the private sector.
2. That individuals be encouraged to develop their full capabilities through provision of a climate of expanding social and economic opportunities for each region.
3. That regional and resource policies encourage adequate development of the natural environment while conserving the aesthetic qualities of that environment.
4. That the timing and impact of Ontario's large and expanding public expenditures be effectively planned and coordinated to fulfil, in an orderly way, the needs of the regions in the Province as well as of the Province itself.
5. That this be a Program for Regional Development which must necessarily involve a working partnership between all of the people of Ontario and government.

The institutional machinery established for implementing these policies includes a Cabinet Committee on Policy Development, chaired by the Prime Minister; an Interdepartmental Advisory Committee on Regional Development, chaired by the Deputy Treasurer and Deputy Minister of Economics; Regional Advisory Boards comprised of provincial field staff and Regional Development Councils with membership drawn from local governments and private groups.

The Regional Development Branch of the Department of Treasury and Economics is responsible for the preparation of regional plans for consideration by the Advisory Committee. These plans, based upon recommendations of the Regional Development Councils and the Regional Advisory Boards, plus results of research from universities, from other Departments and from the Branch itself, will be presented in two consecutive reports - this current Phase I analysis of trends and problems, and a subsequent Phase II report on planning policy recommendations. Both will be forwarded to the Regional Development Councils for "grass roots" reaction before consideration by the Cabinet Committee as policy.

The Background to this Report

The Regional Development Program has been undertaken in three stages. The Inventory stage, completed in 1967, was an assessment of all existing information, projects and policies of

Ontario departments which were concerned with regional development. An active program of university research in regional development, also initiated that year, continues to contribute in-depth analysis of specific development issues.

The Evaluation Stage, completed in 1968, consisted of two parts. One involved the preparation of five-year program recommendations by the Regional Development Councils and parallel reports from the Regional Advisory Boards - both of which provided local evaluation of the nature of problems confronting each region. The other part, carried out by the Branch, involved the collection and assessment of some 63 statistical indicators of social and economic change for townships, counties and districts over the 1951-1966 period. The growth of each of these smaller areas was compared with the Province as a whole to provide a comprehensive evaluation of how each part of every region was faring in population growth, agriculture, manufacturing, services, city growth and other aspects of development.

The third planning stage begins with the present Phase I report which is largely concerned with analysis of the Region's social, economic and physical resources, trends and problems. A succeeding Phase II report on planning policy will recommend planning solutions and development guidelines for meeting the needs identified in this report.

The basic purpose of the current document is to draw together the analysis and problems identified by the Regional Development Council, the Regional Advisory Board, other departments and our own staff so that a preliminary assessment may be made of relative need priorities for each zone and the entire Region.

It is the latter task of defining future goals and objectives for the Region which most demands resolution before proceeding with later stages in the Regional Development Program. This report is presented as a tentative starting point in seeking concurrence among departments and between levels of government about the most desirable direction and degree of emphasis for future regional change. We intend to make the review of this report an open and frank dialogue, completely in keeping with the program's continuing emphasis on Partnership in planning.

Methodology and Sources

The ten development regions, which together form a mosaic over the entire Province of Ontario, are essentially those which were developed by Professors Camu, Weeks and Sametz in their 68 region system for all Canada.¹

The major reasons underlying the utilization of this

¹Pierre Camu, E.P. Weeks and Z.W. Sametz, Economic Geography of Canada, Toronto, MacMillan of Canada, 1964.

regional system are:

1. Their boundaries are co-terminus with local political boundaries. The Provincial Government's policy of entering into development partnerships with local government is thus enhanced. Further, the regional boundaries are also co-terminus with those used by the Dominion Bureau of Statistics in their data collection program, hence, a valuable source of statistics useful for purposes of regional analysis was immediately available to the Ontario Government upon initiation of the Regional Development Program.
2. The regions are for the most part urban-centred and/or functionally defined, and hence will enable the government to fulfil its stated objective of selecting "... those urban centres--both large and small--which will be appropriate growth points for the type of region in which the centre is located". (Design for Development, Phase II, p. 6).

It should be noted that despite their functional value for purposes of administration or research, the boundaries of the ten regions are not regarded by the Government as being fixed for all time. Where development or other relevant circumstances warrant

it, boundaries are subject to revision. Such boundary changes would be preceded by full discussions with all local government units and regional development councils affected and after careful evaluation of appropriate regional planning studies.

The Niagara (South Ontario) Region is being analysed within the concept of a standardized research outline known as Approach to Plan. Approach to Plan is a twelve step process.

In Step 1, provincial goals related to regional development have been concisely stated. In Steps 2 through 6, each of the Niagara Region's economic, social and environmental characteristics has been studied by the Regional Development Branch and regional problems have been identified. An objective analysis of past spatial and sectoral trends has been completed on a Province-wide basis. By comparing the performance of the smallest geographical units in the Province for which data were available with the performance of the Province as a whole, it was possible to derive aggregate performance areas from some 63 key indicators of population and economic change. In the context of these performance areas, an economic base study and a gross land use study have been prepared for the Region.

The preparation of this Report has involved three steps. First, published and unpublished research material relating to the Niagara Region were reviewed, in particular data from the Dominion

Bureau of Statistics, special university studies and studies conducted by various departments of the Government of Ontario. Data for the land use and land capability studies were derived primarily from the Canada and Ontario Land Inventories. Second, industrial performance within the Region was analysed using raw data collected in the field by the Regional Development Branch in its Survey of Manufacturing. The analysis itself is based upon accepted statistical and planning techniques such as shift-share analysis, location quotients, basic non-basic ratios, and labour participation rates. Third, discussions were held with Industrial Commissioners, Town Clerks, representatives of Planning Boards and Officials of Canada Manpower Centres.

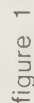
Possible centres of opportunity have also been examined within the framework of Central Place Theory considering particularly the size of each centre and its associated urban area, its past rate of growth, its inter-industry mix, its infrastructure and its linkages with other urban centres. Potential centres of opportunity are being evaluated with careful regard both to the function they are expected to carry out in their respective performance areas and the provincial policy of "nodalized decentralization". All in all, the pattern of growth points and their journey-to-work zones should comprise a geographical mosaic which should offer employment opportunities to essentially all urban and rural people in the Niagara Region.

During the steps outlined above the opinions and recommendations of the Regional Development Councils, Regional Advisory Boards and Government Departments have been solicited and evaluated. (See Appendices 1 and 2). Special university studies related to selected aspects of regional development have also been initiated.

In step 7, all the preceding Steps have been re-evaluated, and regional goals have been tentatively selected. This document represents Steps 1 through 7. In Phase II, which includes Steps 8 through 12, specific regional development plans will be formulated. First, centres of opportunity will be selected for the Niagara Region using the procedures outlined above. Special consideration will also be given to activities and planning considerations that are not specifically oriented towards centres of opportunity, in particular the resource-oriented industries and the social infrastructure.

Tentative regional development policies will then be formulated for the Niagara Region. These policies will be coordinated with the objectives of other Provincial Departments and restated as a series of alternatives. After due policy consideration at both provincial and regional levels, the best set of alternatives will be suggested as the Niagara Region's operating plan for its future development. These will then be submitted to the people of the Region for their comments and suggestions.

DATA SOURCES: 1951 THROUGH 1966



Aggregate Performance

Using 63 selected indicators of population and economic change, the performance level of each county in the Province has been compared with the performance of the Province as a whole.

Five levels of aggregate performance have been distinguished. These are: a. High

b. Moderately High

c. Intermediate (Provincial Average)

d. Moderately Low

e. Low

The Aggregate Performance Map (Figure 1) presents the results of this analysis. This map clearly demonstrates three important factors concerning development in the Niagara Region. First, no counties scored in either the "High" or "Low" performance categories; second, both Wentworth and Lincoln counties, which scored in "Moderately High" categories both front onto Lake Ontario, and third, Norfolk and Haldimand counties, both of which scored "Moderately Low" front onto Lake Erie. Brant and Welland counties both fall into the "Intermediate (Provincial Average)" category.

CHAPTER II

PHYSICAL AND GEOGRAPHIC SETTING

Geographic Setting

Area The Niagara Region as defined by this report, embraces a number of contiguous counties lying between the shores of Lake Ontario and Lake Erie, and extends eastwards to the Niagara River. The Region covers an area of 2,794 square miles.

Location In the North American context, the Niagara Region lies within a triangle of actual and potential urban growth, the apexes of which lie in Montreal, Chicago and New York City. The Region is located within one of Eastern North America's major emerging development corridors.

Within southwestern Ontario itself, there have been two major axes of development in the past 25 years, the first along Highway 401 from Windsor to Toronto, and the second the "Golden Horseshoe" from Toronto to Niagara Falls along the shore of Lake Ontario. The third potential axis of growth is along the north shore of Lake Erie. The Region's past growth and future potential result from the fact that it lies across two of these growth axes within the emerging urban complex of southwestern Ontario.

More specifically, the Region has easy access to the

major metropolitan markets of both southern Ontario and upper New York State. Because of cheap water transport through the Great Lakes, the Region traditionally has had a locational advantage for industries based upon the processing of bulky raw materials such as iron ore and wood pulp. Today its accessibility to urban markets gives it an added advantage for industries oriented to the consumer market as well.

Basic Physiography and Geology

General Characteristics The Niagara Region contains the record of several million years of earth shaping processes. While much of this record has been either removed or buried by erosion and the action of weathering, some distinctive features still remain as evidence of important geological events. In particular, these are (a) the Niagara Escarpment, a prominent ridge extending from Niagara Falls to the Bruce Peninsula and Manitoulin Island, (b) the Onondaga Escarpment running from Fort Erie to Hagersville, and (c) the intervening vales which slope gently to the south and west(see Figure 2).

Since the retreat of the continental ice sheets about 10,000 years ago, the younger deposits, which directly or indirectly were the result of continental glaciation, have altered the general appearance of the Niagara Region. Associated with the melting of the ice sheets were periods of uplift of land, the formation of

[illegible]

figure 2

drainage channels or spillways for the melting ice, and the general sorting and dumping of the debris transported within, above and below the ice.

On the basis of this type of geological activity it is possible to divide the Niagara Region into a number of broad physical regions.

- (1) The Escarpment areas - these consist of the two ridges already mentioned. They are largely composed of several types of water laid deposits, mainly limestones and shales.
- (2) The Clay Plains - the most extensive area of clay extends south of the Niagara Escarpment from eastern Ancaster Township, and the townships of Onondaga and Tuscarora to the Niagara River. North of the Niagara Escarpment is the Iroquois Plain which extends from the foot of the Escarpment to the shoreline of Lake Ontario.
- (3) The Sand Plains - the most extensive area of sand, representing large deposits in former glacial lakes, occupies most of Norfolk County, extends through Brant County into the area of Brantford, and into Wentworth County to the southwest of Burlington. Other scattered areas of sand plain are to be found within the clay

plains, both along the Lake Ontario shore, and in the Niagara Peninsula.

- (4) The Flamborough Limestone Plain - this extends through the northern townships of Beverly and East and West Flamborough and the areas to the northwest of Burlington. Large oval hills of glacial drift in the form of drumlins are found in these areas.
- (5) Moraines - these are deposits of unsorted glacial debris generally seen today as continuous ridges running approximately north-south in Norfolk County, and east-west above the Niagara Escarpment. Other more gravelly types of moraines known as kames are found in the vicinity of Fonthill and immediately west of Dundas.
- (6) Spillways - these deep, wide valleys were responsible for the disposal of water from melting glaciers. They extend for some distance among the moraines in the area of Paris, Galt and the Grand River, and near Waterdown and Dundas. Coarse, sandy alluvial deposits are found in these valleys.

The economic importance of these surface deposits and geologic rock formations will be analysed in later chapters, where agricultural potential based on soil type and fertility,

recreational developments in various valley and escarpment locations, and mining and extractive industries will be discussed in greater detail, and the implications of man's use of the land will be considered.

Climate

Unlike the northern regions of Ontario, climate is not a limiting factor in the economic development of the Niagara Region. The proximity of two large bodies of water, Lake Erie and Lake Ontario, and the presence of the Niagara Escarpment constitute the major moderating elements.

Owing to its southern location, the Niagara Region experiences a long frost-free period which ranges from 142 days at Brantford, to 166 days at Niagara Falls and 174 days at Grimsby. Precipitation varies between 27 and 35 inches annually and is generally well distributed throughout the year. Summer temperatures average about 67°F, while the winter average is about 27°F.

Major Resources

Agricultural Resources This area of Southern Ontario is fortunate in that it possesses a wide variety of soils which have developed from the different geologic deposits.

Much of the Niagara Region contains extensive areas of

superior quality land best suited to mixed farming. In addition to the heavy soils of the livestock rearing and field crop areas there are two main areas of lighter soils devoted to specialized farming. The first covers much of the Lake Ontario shoreline, where fruit farming predominates on light well-drained loams. The second area covers much of the southwestern County of Norfolk and part of Brant, where the sandy soils favour the production of tobacco.

Recreational Resources The attractions and the development of the Niagara Region as a recreational area may be directly linked to (a) the beauty of the physical environment, including the falls, escarpment, gorge and lakes; (b) the orchards and agricultural land at blossom time; (c) the accessibility both for Canadian and American visitors; (d) its cultural value as an area of historical interest.

At present, many of the recreational developments are concentrated along the northern and eastern sections of the Niagara Peninsula and, to a smaller extent, along the Lake Erie shoreline. The Grand River is an area of potential development where the combination of land and water resources may be utilized in similar fashion.

Mineral Resources The mineral resources of the Niagara Region are mainly structural materials, the non-metallic mineral, gypsum, and some natural gas and oil. Reserves of fuels are

minimal in the blanket sands in the southern counties because development has been carried out for many years. Much of the activity in the extraction of structural materials is in the immediate vicinity of the Escarpment.

Regional Water Supply Because of its physical location with the two lakes and the Niagara River on three sides, the water supply in the Region is generally adequate for present needs. In addition to lakes Erie and Ontario, other sources of water include the Grand River, the Welland Canal, and underground sources such as artesian wells. After treatment, the water is of good quality.

Present Land Use

Figure 3 (see back pocket) shows the present pattern of land use in the Niagara Region. Ten categories have been distinguished: residential, commercial and industrial, proposed industrial development, forest and woodland, agriculture and other rural land uses, public open space, extractive industry, large institutional holdings and Indian Reserves, airports and water bodies. These categories were initially mapped on a scale of 1:250,000. From this data the more generalized map shown on Figure 3 was produced.

The major concentrations of urban uses, residential, industrial and commercial, are contained in the Hamilton, Burlington St. Catharines Corridor and the St. Catharines-Port Colborne-

Niagara Falls triangle. Other concentrations can be seen in the vicinity of Brantford and Simcoe.

Concomitant with the use of land for residential, industrial and commercial purposes is the use of land for transportation networks. Along the Region's major transportation corridors, in particular, the Queen Elizabeth Way from Burlington to Niagara Falls, a process of intensification of urban uses is apparent. Ribbon development along major highways is caused by unlimited access to these highways, the pressures of urbanization around the Region's cities and the desire of industrialists to locate their firms along highways for advertising purposes. The initial stages in the development of a continuous urban corridor extending throughout the northern and northeastern parts of the Region can be clearly seen.

The future industrial development around Nanticoke is shown on the map, (Figure 3). To the west of Nanticoke is the site of the Steel Company of Canada's new steel complex. On the Lake Erie shore to the east of Nanticoke is the Hydro generating station which is under construction at present. Also located in the area is the site for the proposed Texaco oil refinery.

Quarries and sand and gravel pits are found mainly along the Niagara Escarpment which has traditionally been the major source of Southern Ontario's structural materials. Other concentrations of this type of land use are found in the vicinity of Hagersville where gypsum is mined and around Brantford and Paris.

The areas most devoted to rural uses are in the central Peninsula particularly in the southwestern counties of Norfolk and Haldimand, and in Brant. The largest single category of land use in the Region is agricultural land (71 per cent). A more detailed discussion of the different types of agricultural land will be found in Chapter VI of this report. The distribution of the Region's forested areas is also discussed in Chapter VI.

Figure 3 shows clearly the distribution of land in the Niagara Region that is now used for recreation and summer cottages. The major areas of intensive recreational use lie along the Niagara River and the Lake Erie shoreline from Long Point Provincial Park in the west to Port Colborne in the east. Other important concentrations of recreational land can be found along the Niagara Escarpment.

Conflicts and Problems

The basic conflict arising out of the utilization of natural resources in the Niagara Region is that between their use for immediate economic satisfaction and their long-term rational utilization.

Within the agricultural sector, there is the problem of urban sprawl and its consequent effects on valuable fruit lands. The areas of fastest urban growth are along the Hamilton-Burlington-St. Catharines Corridor and in the St. Catharines-

Port Colborne-Niagara Falls triangle. These are placing great pressure upon good agricultural land.

The loss of fruit lands not only affects the agricultural industry, but also the recreational aspects of the fruit belt, such as visual screens and "fruit festivals". Professor John N. Jackson in Recreational Development and the Lake Erie Shore has demonstrated that uncontrolled development along the Lake Erie Shoreline detracts from its recreational potential.

In the development of recreational facilities there is the problem of water pollution both by industries and by local municipalities, and the defacing of scenic areas by extractive industries within the Escarpment. Within the Region there is a conflict between the exploitation of non-renewable resources, such as those utilized by building material and aggregate producers from the Escarpment, and their use as recreational and visual amenities that do not exploit the landscape. Ironically, in the development of tourist areas and tourist attractions, the aesthetic qualities of many areas are reduced by advertisements of objectionable size and sound - as seen in the area of Niagara Falls.

A continuous process of updating and expanding capacity is essential in maintaining and extending the regional supply of water. The areas which are located in the interior of the peninsula are the most expensive to service, since costs, of pumping

increase with distance from the sources of supply, in particular the distance from Lakes Ontario and Erie.

CHAPTER III

SOCIAL AND ECONOMIC CHARACTERISTICS

Summary

1. The Region was the second fastest growing region in Ontario between 1951 and 1966, and the third fastest growing region between 1961 and 1966.
2. The Niagara Region is highly urbanized. Approximately 82 per cent of its population resides in incorporated urban centres.
3. During the 1951 to 1966 period population shifts out of the rural areas resulted in greater concentration of population in the urban centres. Rural areas accessible to the major urban centres experienced growth in the rural non-farm population.
4. The regional age-sex distribution patterns approximate those of the Province.
5. The agricultural sector is important in the regional economy despite the small proportion of the labour force involved.
6. The Niagara Region has not kept pace with Ontario in adding new jobs as old industries have stabilized or declined.

7. Manufacturing and service industries in 1961 accounted for 70 per cent of the regional labour force.
8. The tertiary sector has grown relative to that of the Province, but during the 1951 to 1961 decade, its ability to offset the losses in the secondary sector was negligible.
9. In 1966, income levels for the Niagara Region were higher than those for the Province.
10. The largest urban centres within the Niagara Region had income levels higher than those of their respective counties.
11. The more rural counties of Norfolk and Haldimand have lower income levels than the more urbanized counties in the northern and northeastern parts of the Region.
12. The educational achievement of the general population in the Niagara Region is below that of the Province at elementary, secondary and post-secondary levels.
13. Post-secondary educational facilities are concentrated in the urban counties of Wentworth, Lincoln and Welland.
14. Health services provided in the Niagara Region as a whole are slightly below provincial levels, and are largely lacking in the rural counties and smaller centres.

15. The accessibility of the Niagara Region and the combination of land and water resources contribute significantly to the recreational attraction of the area.
16. On the basis of social and economic characteristics it is possible to distinguish two major corridors of urbanization and rapid growth: (1) the Hamilton-Burlington-St.Catharines corridor, and (2) the St. Catharines-Port Colborne-Niagara Falls triangle.
17. On the basis of aggregate performance, the County of Wentworth ranks high, while the more rural counties, Norfolk and Haldimand, rank low. Brant, Welland and Lincoln counties are areas of intermediate performance. (See Figure 1).

Population

General Characteristics The total population of the Niagara Region was 945,576 in 1966.¹ This represented 14 per cent of the population of Ontario within 0.8 per cent of the Province's land area. With a regional density of 338 persons per square mile, Niagara ranked second in both size and density of population to the Central Ontario Region, which had a population of 2,501,958 and a density of 975 at the same period.

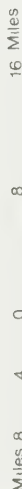
Although during the period 1951 to 1966 the Niagara Region experienced rapid rates of population growth, the increase between 1951 and 1966 (49 per cent) and between 1961 and 1966 (10 per cent) was below the corresponding provincial rate of 51 and 12 per cent.

An examination of the annual assessed population figures prepared by the Department of Municipal Affairs revealed similar upward trends in population growth for the Niagara Region up to 1968.

Within the Niagara Region, the greatest concentrations of population are to be found in the northern and northeastern areas (see Figure 4). On a county basis, the highest densities may be observed in Wentworth (861 persons per square mile), Welland and

¹The Niagara Region as defined here includes Norfolk County and the Town of Burlington.

DENSITY OF POPULATION 1966
TOWNSHIPS AND INCORPORATED CENTRES
OVER 2500



REGIONAL DEVELOPMENT BRANCH DEPARTMENT OF TREASURY AND ECONOMICS
Source: Dominion Bureau of Statistics, Census of Canada, Population 1966

Lincoln. The counties which were the most densely populated in 1951 have also been those that have grown the fastest between 1951 and 1966, thus increasing the population concentration in the northern parts of the Region. Of the three most densely populated counties, Lincoln experienced the most dramatic population growth, 64 per cent, greater than either Wentworth or Welland over the period 1951 to 1966. It is likely that this rapid rate of growth was a direct result of its physical location between Wentworth and Welland counties, along a north-west to south-east axis of fast growth. The effect of the Niagara Escarpment and the existence of transport routes between Hamilton and St. Catharines have concentrated this population expansion in Lincoln County, where the rate of natural increase for the period 1951 to 1966 was 31.7 per cent, and the rate of net in-migration for the same period was 31.8 per cent, the highest rates in both categories for the Niagara Region.

Two major population trends are apparent in Southern Ontario: first, the concentration of population in urban centres, with attendant shifts out of the rural areas; second, the growth of the rural non-farm population in those rural areas accessible to the major urban centres. Both trends are evident in the Niagara Region.

Urban-Rural Distribution By 1966, the Niagara Region was highly urbanized. (See Table 3.1) Six urban centres -

TABLE 3.1

URBAN AND RURAL POPULATION DISTRIBUTION BY COUNTIES, NIAGARA REGION, 1961 AND 1966

	POPULATION - 1961 AND 1966 DEFINITIONS			
	1961		1966	
	No. (1)	% (2)	No. (3)	% (4)
BRANT				
Urban	63,635	75.9	69,529	76.5
Rural Farm	7,974	9.5	7,267	8.0
Rural Non-Farm	12,230	14.6	14,149	15.5
HALDIMAND				
Urban	9,454	33.5	11,327	37.7
Rural Farm	8,900	31.6	8,254	27.5
Rural Non-Farm	9,843	34.9	10,439	34.8
LINCOLN				
Urban	94,869	74.9	117,274	80.3
Rural Farm	12,180	9.6	13,599	9.3
Rural Non-Farm	19,625	15.5	15,226	10.4
WELLAND				
Urban	133,658	81.1	149,776	83.8
Rural Farm	6,415	3.9	6,365	3.5
Rural Non-Farm	24,668	15.0	22,677	12.7
WENTWORTH ⁽¹⁾				
Urban	324,341	90.4	356,839	90.5
Rural Farm	8,762	2.4	8,718	2.2
Rural Non-Farm	25,734	7.2	28,742	7.3
TOTAL, NIAGARA REGION				
Urban	625,957	82.1	704,745	83.9
Rural Farm	44,231	5.8	44,203	5.3
Rural Non-Farm	92,100	12.1	91,233	10.8
NORFOLK				
Urban	17,466	34.6	19,031	37.6
Rural Farm	14,621	29.0	13,939	27.6
Rural Non-Farm	18,388	36.4	17,608	34.8
TOTAL, NIAGARA REGION INCLUDING NORFOLK				
Urban	643,423	79.2	723,776	81.3
Rural Farm	58,852	7.2	58,142	6.5
Rural Non-Farm	110,488	13.6	108,841	12.2

(1) Wentworth County total does not include that part of Burlington that is in Halton County.

Source: Canada, Dominion Bureau of Statistics, Census of Canada, Population, 1961 and 1966, Table 13.

Brantford, Burlington, Hamilton, Niagara Falls, St. Catharines and Welland accounted for 65 per cent of the regional population. Hamilton alone contained 32 per cent of the total. Other incorporated urban municipalities accounted for about 17 per cent of the population total and approximately 18 per cent could be technically classified as rural. The truly rural population of the Niagara Region, classified as rural farm, made up about six per cent of the total. During the period 1961 to 1966, all counties experienced a general decline in the rural farm proportion of the total rural population. (See Figure 5).

Both in 1961 and 1966 the most highly urbanized counties were Lincoln, Welland and Wentworth. Both Haldimand and Norfolk were over 60 per cent rural in 1966. This tendency to concentration of urban activity in the counties of the north and northeast may be explained as a response to the influence of the metropolitan Toronto area along the western shore of Lake Ontario.

The rural non-farm population of the Niagara Region appears to be urban-oriented, attracted to the employment opportunities and potential for better incomes in the cities. It includes both commuters who have changed from a rural to an urban job without changing place of residence and former urban residents who have moved out into the country in response to high land and housing costs in the Region's cities.

NIAGARA (SOUTH ONTARIO) DEVELOPMENT REGION PROPORTION OF URBAN, RURAL FARM & RURAL NON-FARM POPULATION BY COUNTY 1961 and 1966

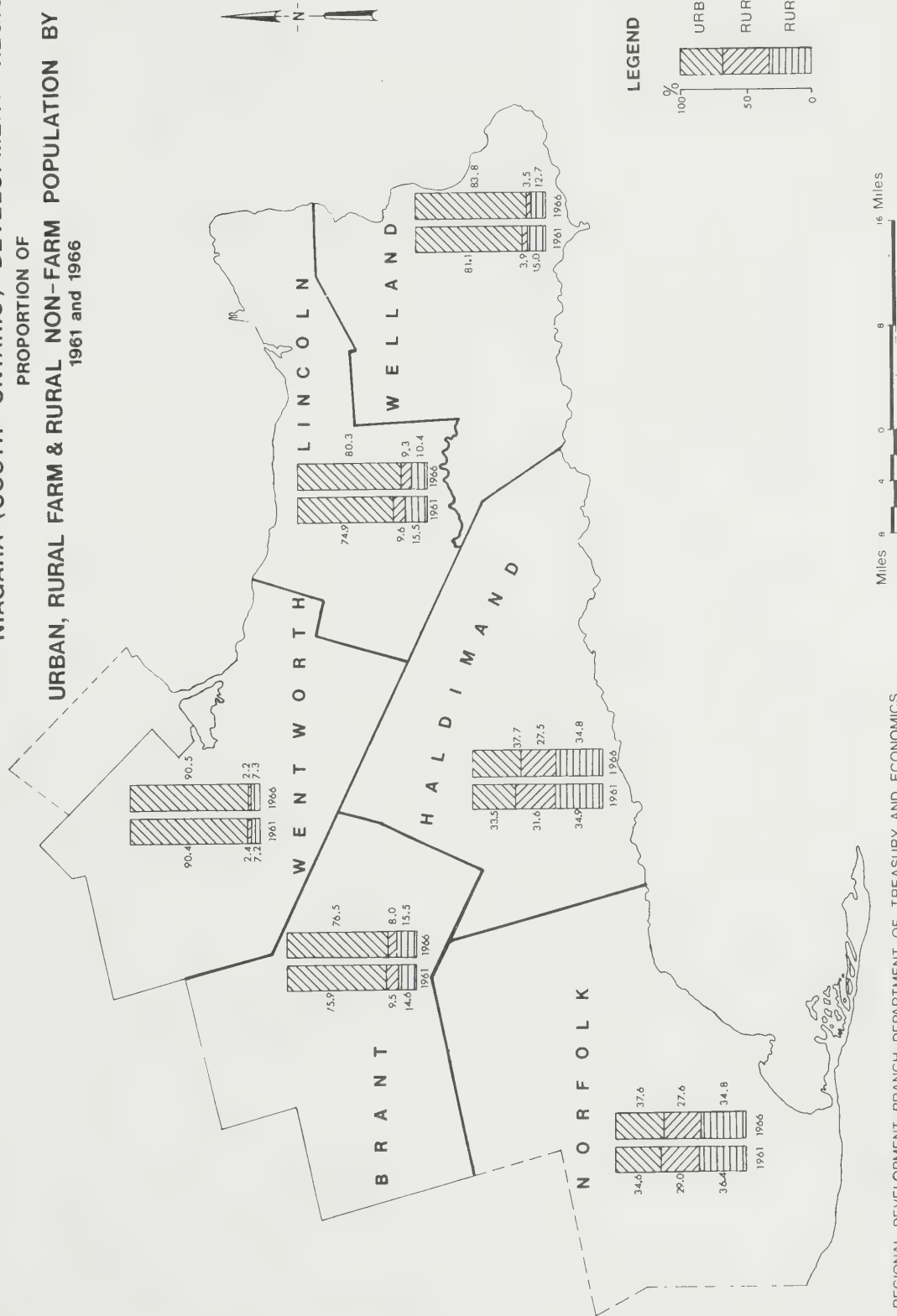


Figure 6 which shows the percentage change in population on a township basis, emphasizes the fact that the areas which experienced highest rates of change over the 1961 to 1966 period, were those which were most accessible to the established urban centres. The initial stages in the development of urban corridors between Hamilton, Burlington and St. Catharines, and between St. Catharines and Port Colborne, can therefore be clearly seen. The largely rural townships in the southern and western areas of the Region have had very low rates of population growth since 1951. In particular, the general pattern of decline seen in most of Norfolk County may be explained by its predominantly rural orientation and comparatively poorer accessibility to the areas of fast growth in the north and northeast.

Elements of Population Change: Natural Increase and Net Migration Natural increase is defined as the excess of births over deaths at a given time. The Niagara Region compared favourably with the Province in terms of the rate of natural increase for the 1951 to 1966 period. The regional average was 29.2 per cent, while the provincial average was 31.4 per cent. Of the urbanized counties, both Lincoln and Welland experienced higher rates than Wentworth, but intra-regional variations were generally small.

Within the Niagara Region, Lincoln County showed the

TOTAL POPULATION, PERCENTAGE CHANGE, BY TOWNSHIPS, 1966/1951

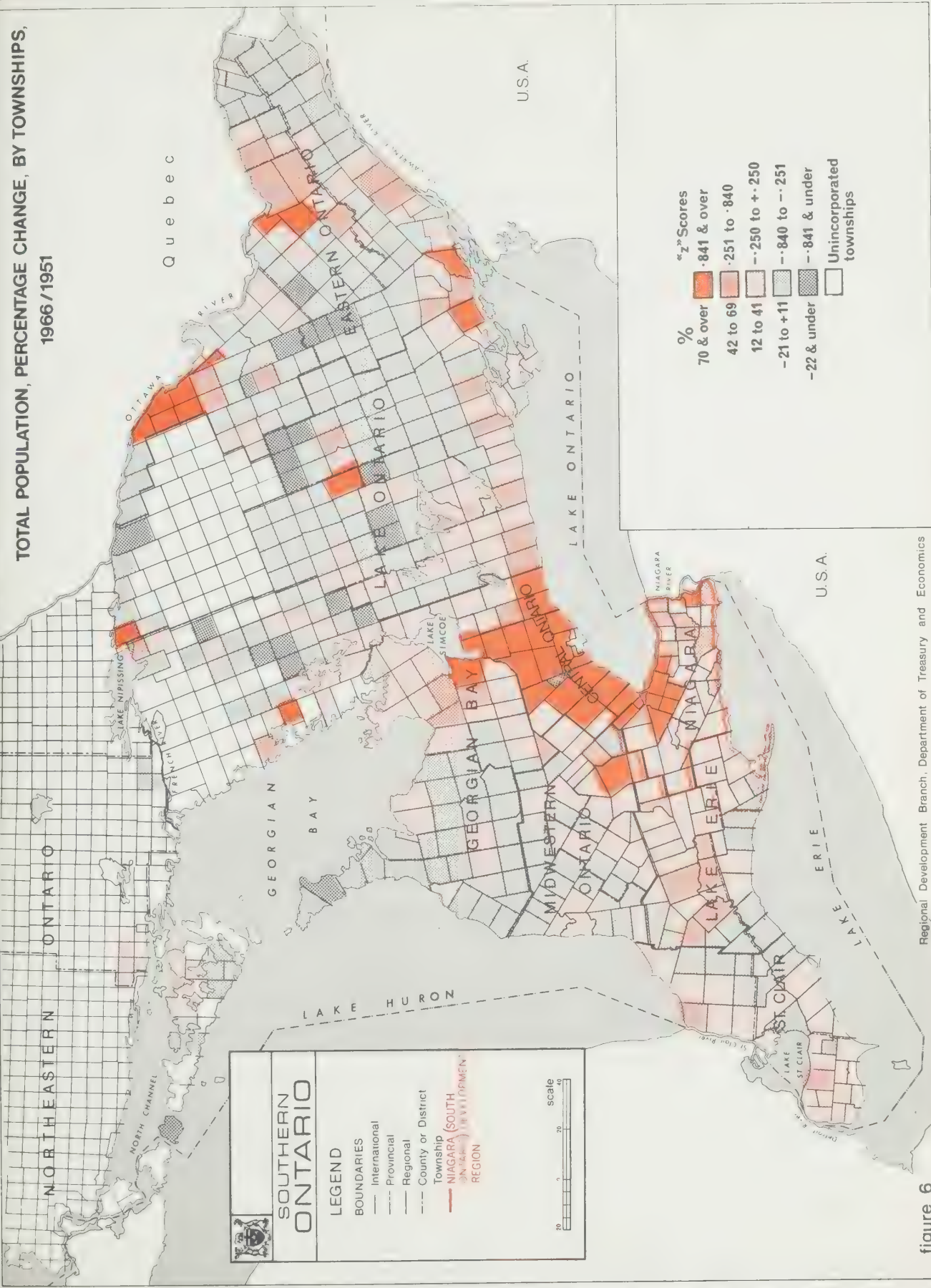


figure 6

highest positive gain from net in-migration, a rate of 8.2 per cent for 1961 to 1966, compared with the regional average of 2.7 per cent and the provincial average of 3.8 per cent. Norfolk County had the highest rate of out-migration during that period. This out-migration may have resulted from a desire for higher incomes outside the rural areas, and a need to find alternative sources of income. Intra-regional migration patterns were a much more significant factor in the redistribution of population between 1951 and 1966 than were differences in the rate of natural increases.

Age Structure The Niagara Region experienced its highest rates of growth between 1951 and 1966 in the younger age groups, 5 - 14 and 15 - 19, where the percentage change approximated 59 per cent. The leading counties again were Lincoln, Welland and Wentworth. All counties, except Norfolk, showed an increase of over 60 per cent in these age groups during this period. This is of importance in an assessment of the employment and economic situation in the near future, as these younger groups represent the labour force potential of the Niagara Region.

Over 50 per cent of the population are in the wage earning age group which includes the most mobile and dynamic group - those between the ages of 20 and 24. The proportion of population 65 years and over was approximately nine per cent in the Niagara Region while the pre-school and public school age groups accounted for 31

per cent of the population. It may therefore be concluded that as the younger age groups move into the labour force, the non-working members of the population who are supported by the labour force will constitute a declining proportion of the total - a very healthy regional trend.

Population Distribution by Sex The trend for the period 1951 to 1966 has been for the number of women in the population of the Niagara Region to increase at a faster rate than the number of men. Wentworth and Brant, with more women than men in 1951, have shown an increase in the male-female ratio, while Welland, Haldimand, Lincoln and Norfolk, with more men than women in 1951, have shown a decrease in the ratio of men to women. In the rural townships there is an excess of men over women and this may be explained by the predominantly male labour force in agriculture. In the small towns there is a slight excess of women over men, suggesting an out-migration of men who may be seeking greater job opportunities elsewhere. The excess of women over men in the cities may be explained by one or more of the following: (a) there are greater job opportunities for women in the metropolitan areas; (b) men are more likely to live outside the city and commute to the urban areas, and (c) the cities are likely to have a full age structure and therefore a higher percentage of older women, since women tend to live longer than men.

Population Distribution by Ethnic Origin The Niagara

Region has a heterogeneous population, composed mainly of European ethnic groups and small numbers of Asiatic and other groups. Lincoln, Welland and Wentworth counties contain the largest number of people from the British Isles, Italy and Germany. Brant and Wentworth counties have the largest share of the small native Indian population while a majority of the people with a French background live in Wentworth and Welland. Most of the Indians live on the Six Nations Reserve in Brant County, and constitute a relatively homogeneous population group.

In 1961 over 30 per cent of the Region's population was born outside Ontario. The majority of the immigrant population tends to settle in the urbanized areas of the Region, and this may be explained by the greater variety in employment opportunities and the demand for different skill categories in industry.

Population Projections On the basis of demographic factors, the Economic Analysis Branch, Department of Treasury and Economics, has predicted a strong general upward trend in population totals within the Niagara Region.² The Region will have experienced an increase of 25 per cent between 1966 and 1991 when the regional total will approximate 1.12 million people. It should be

²Population projections include Norfolk County but exclude the Town of Burlington.

emphasized that the population projections given here are not planning targets, but are strictly demographic trends. They are therefore not to be confused with the planning targets in Design for Development - Toronto-Centred Region, or possible future targets for the Niagara Region.

If demographic factors were the only ones determining patterns of population change, the population would be expected to decline in the more rural counties of Haldimand and Norfolk by 1991. However, in view of the fact that social and economic conditions can operate to alter the trends of early projections, one can foresee redistributions and inter-regional shifts in the population of the Niagara Region within the next few decades. Early evidence of the expected shifts may be seen in current activity along the Lake Erie shore. The location of a basic industry, a steel mill at Nanticoke together with a Hydro plant and oil refinery, and the plans for development of other industries and services in the area will result in population growth and expansion of existing urban centres in the counties of Haldimand and Norfolk.

Labour Force

General Characteristics The labour force is the proportion of the total population that is between 15 and 65 years of age and is either employed or seeking employment. In 1961 the labour force of the Niagara Region was approximately 304,000. Manufacturing accounted for 37 per cent of the total, while trade, community, business and personal services accounted for 33 per cent. Although agricultural activity is important in terms of the amount of land used, only a small proportion of the labour force, less than eight per cent, is engaged in this sector. Most people are employed in urban oriented activities, especially manufacturing and services.

Within the Niagara Region, Lincoln County experienced the greatest increase in labour force over the period 1951 to 1961; only Brant County showed a less than 10 per cent increase. In absolute terms the lowest increases occurred in Haldimand and Norfolk counties.

Labour Force Participation Rates In 1961, the Niagara Region had an overall participation rate of 55 per cent. This compared favourably with the provincial average of 57 per cent, as shown in Table 12 in the Appendix. The male participation rate exceeded 75 per cent in each county, the highest being in the

counties of Wentworth, Haldimand and Lincoln, each of which averaged over 80 per cent. The female participation rate varied between 27 and 32 per cent. Norfolk and Brant had female participation rates which were over 32 per cent. Of the more industrialized counties, Brant had the highest female participation rate.

The Location Quotient In order to assess the situation in the Niagara Region, the location quotient was used to determine which groups of industries may be considered as basic or export³ oriented, in contrast to the non-basic or internal and service oriented. Where the location quotient of an industry is greater than unity (1.0), it may broadly be classified as an export industry. The deviation from unity may also be an indication of the degree of concentration of that industry group in the Region or the County. The location quotients on Table 3.2 were calculated from labour force data shown on Table 11 in the Statistical Appendix to this report, using the Province as the base.

On a county basis the location quotient for the year 1961 identified, (1) agriculture as a basic industry in Brant, Haldimand, Lincoln and Norfolk; (2) fishing and trapping as basic to Haldimand and Norfolk; (3) manufacturing as basic to Brant, Lincoln, Welland and Wentworth; (4) construction as basic to Lincoln and Wentworth;

³In this context, export means oriented towards sales outside the Niagara Region.

TABLE 3.2

LOCATION QUOTIENTS, COUNTIES, NIAGARA REGION, 1951 AND 1961

	Brant		Haldimand		Lincoln		Welland		Wentworth ⁽¹⁾		Norfolk		Niagara Region Including Norfolk	
	1951 (1)	1961 (2)	1951 (3)	1961 (4)	1951 (5)	1961 (6)	1951 (7)	1961 (8)	1951 (9)	1961 (10)	1951 (11)	1961 (12)	1951 (13)	1961 (14)
Agriculture	0.93	1.30	2.99	3.47	1.24	1.36	0.36	0.40	0.30	0.34	4.37	6.10	0.87	1.09
Forestry	0.01	0.03	0.08	0.07	0.08	0.03	0.03	0.03	0.02	0.04	0.67	0.57	0.08	0.07
Fishing and Trapping	0.10	0.06	16.00	6.00	0.30	0.11	0.08	0.07	0.30	0.33	8.00	3.00	1.00	1.00
Mining, Quarries and Oil	0.19	0.22	1.56	0.94	0.13	0.11	0.25	0.33	0.06	0.11	0.25	0.11	0.19	0.17
TOTAL PRIMARY	0.75	0.99	2.66	2.77	1.00	1.01	0.31	0.35	0.24	0.27	3.59	4.54	0.72	0.83
Manufacturing	1.56	1.45	0.72	0.90	1.33	1.35	1.50	1.45	1.58	1.51	0.46	0.54	1.42	1.38
Construction	0.72	0.80	0.85	0.94	1.18	1.06	1.04	0.97	0.94	1.11	0.91	0.91	0.97	1.02
Transportation, Communication and Other Utilities	0.58	0.62	0.74	0.96	0.76	0.79	1.25	1.12	0.71	0.76	0.54	0.55	0.80	0.82
TOTAL SECONDARY	1.26	1.17	0.75	0.91	1.20	1.18	1.38	1.30	1.32	1.27	0.55	0.60	1.24	1.20
Trade	0.87	0.91	0.81	0.86	0.84	0.90	0.76	0.85	0.98	1.02	0.82	0.80	0.89	0.94
Finance, Insurance and Real Estate	0.61	0.63	0.42	0.41	0.64	0.66	0.48	0.54	0.70	0.78	0.55	0.49	0.61	0.68
Community, Business and Personal Service Industries ⁽²⁾	0.70	0.98	0.71	0.70	0.69	0.95	0.80	1.01	0.79	0.98	0.55	0.61	0.75	0.95
Public Administration and Defence ⁽³⁾	n.a.	0.49	n.a.	0.67	n.a.	0.47	n.a.	0.64	n.a.	0.47	n.a.	0.49	n.a.	0.51
TOTAL TERTIARY	0.76	0.85	0.72	0.72	0.74	0.83	0.76	0.86	0.85	0.89	0.65	0.64	0.79	0.85

n.a. Not available.

⁽¹⁾Excludes that part of Burlington that is in Halton County.⁽²⁾Includes Public Administration and Defence in 1951.⁽³⁾Included in Services in 1951.

Note: The Location Quotient is a statistical measure of the relative concentration of a particular industry in an area. It may be derived as follows:

Proportion of workers in major industrial group A in a region, county or urban centre.

Proportion of workers in major industrial group A in a region or province.

Ratios greater than 1.0 would indicate that the industry is basic or export oriented; ratios smaller than 1.0 would indicate that the industry is non-basic and serves the local market.

Source of original figures: Canada, Dominion Bureau of Statistics, Census of Canada, Labour Force, 1951, 1961 (Ottawa: Queen's Printer).

(5) transport, communication and other utilities as basic to Welland; (6) trade as basic to Wentworth; (7) forestry, mining, quarries and oil, finance, insurance, and real estate, public administration, and defence as non-basic or internal and service oriented industries'.

The location quotient is a useful tool in analysing the relative position of primary, secondary, and tertiary sectors in the Niagara Region. The location quotients on Table 3.2 demonstrate

- (a) that the greatest concentration of primary activities was in Norfolk and Haldimand counties.
- (b) that the most noticeable increases in primary activity occurred in the more rural counties of Norfolk and Haldimand during the 1951 to 1961 decade.
- (c) that Lincoln, Welland, Wentworth and Brant were more oriented to secondary industry with an emphasis on basic manufacturing for export beyond the Niagara Region.
- (d) that the secondary sector showed less concentration over 1951 to 1961 in all counties except Norfolk and Haldimand, suggesting a relative decline in manufacturing.
- (e) that the lowest share of secondary activities

was in Haldimand and Norfolk counties.

- (f) that the tertiary sector had a location quotient of 0.85 in the Region, with the lowest score in Norfolk County. In 1961 Wentworth and Welland counties were the only ones to exceed the regional average, with location quotients of 0.89 and 0.86 respectively.
- (g) the tertiary or service sector showed increases in all counties except Norfolk and Haldimand.

Summary An analysis of changes which occurred in the 1951 to 1961 decade revealed that the Region's proportion of the Ontario labour force declined from 14 to 13 per cent. Among the more highly industrialized counties in the Region, Lincoln was the only one which experienced a relative increase in its proportion of the Province's labour force. There were small increases in the primary and manufacturing sectors, but much larger increases in the tertiary sector.

Wentworth County, with nearly 46 per cent of the regional labour force, also experienced relative losses in manufacturing and

small shifts in the tertiary sector.

The main losses in this decade were in the manufacturing sector. Although rapid growth occurred in the tertiary sector this was not sufficient to compensate for losses in the secondary sector. However, since 1961 the situation improved, and this will be revealed in later discussions with respect to manufacturing.

Income

General Characteristics Income measures are a most important indicator both of the level of economic development and of intra-regional variations in performance.

An analysis of the income structure of the Niagara Region⁴ has been undertaken using per capita income, average income per taxpayer, average personal income, average income per household and average income per employee in manufacturing. (See Table 3.3). Average personal income is calculated by dividing total income, as determined from both taxable and non-taxable personal income returns by the total number of taxable and non-taxable returns. In contrast, average income per taxpayer is calculated by dividing total income from taxable returns only by the number of taxable returns. Average income per household is a measure of a household's effective buying income, and includes income from wages, salaries and dividends, minus the income tax paid. Similarly, per capita income measures the effective buying income of each member of the population.

All indicators, except the average income per household showed that the Region enjoyed a considerably higher income level in 1966 than did the Province. The average income per taxpayer in

⁴ Including Norfolk County but excluding the town of Burlington for which data are not available.

TABLE 3.3

INCOME FACTORS, NIAGARA REGION AND PROVINCE OF ONTARIO, 1961 AND 1966

	PER CAPITA INCOME		AVERAGE INCOME PER TAXPAYER		AVERAGE PERSONAL INCOME		AVERAGE INCOME PER HOUSEHOLD		AVERAGE INCOME PER EMPLOYEE IN MANUFACTURING	
	% Change 1966/1961		% Change 1966/1961		% Change 1966/1961		% Change 1966/1961		% Change 1966/1961	
	\$ (1)	(2)	\$ (3)	(4)	\$ (5)	(6)	\$ (7)	(8)	\$ (9)	(10)
BRANT	2,131	34.2	4,971	17.9	4,292	22.7	7,602	30.7	5,107	29.9
Brantford	2,212	30.4	5,044	19.7	4,375	24.0	7,633	26.9	5,235	30.5
HALDIMAND	1,660	35.1	4,780	16.7	3,827	16.1	6,038	33.3	3,903	21.7
LINCOLN	2,254	23.0	5,632	24.0	4,901	28.7	8,212	24.9	6,015	35.5
St. Catharines	2,274	13.7	5,683	23.8	4,979	27.6	8,205	24.1	6,177	34.5
WELLAND	2,228	34.7	5,322	18.3	4,565	21.5	8,069	28.0	6,021	20.6
Niagara Falls	2,348	33.3	5,363	20.7	4,572	26.3	8,169	25.3	5,750	26.3
Welland	2,332	20.3	5,254	19.9	4,560	22.0	8,970	23.4	6,118	19.3
WENTWORTH	2,203	29.1	5,575	20.2	4,947	23.6	8,213	26.7	5,941	20.0
Hamilton	2,255	29.2	5,575	20.1	4,947	23.4	8,328	26.4	6,003	19.6
NORFOLK	1,606	37.6	5,015	7.7	4,193	17.6	5,728	36.0	4,645	20.2
TOTAL, NIAGARA REGION INCLUDING NORFOLK	2,157	30.4	5,438	19.6	4,741	23.5	7,895	27.8	5,793	22.8
TOTAL, PROVINCE OF ONTARIO	2,117	32.0	5,398	20.0	4,686	22.5	7,970	27.6	5,572	24.5

Note: Data on town of Burlington not available.

Sources: Sales Management Magazine, 1962 and 1967.

Canada, Department of National Revenue, Taxation Division, Taxation Statistics, 1963 and 1968, Table 5 and Table 6.

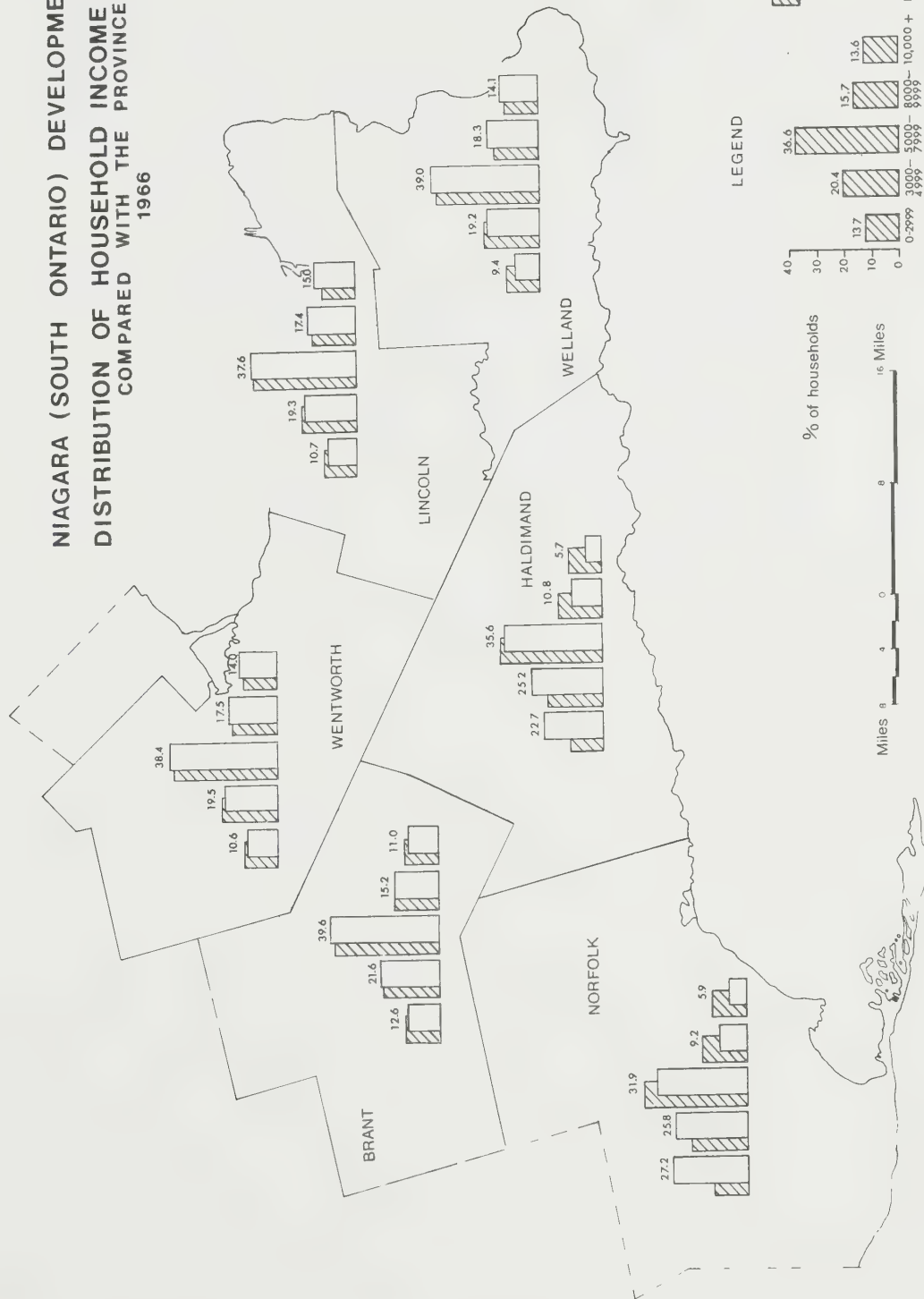
Canada, Dominion Bureau of Statistics, Census of Manufactures, 1964 and 1966, (Ottawa: Queen's Printer), Section G, Geographical Distribution and Preliminary Bulletins.

the Region exceeded that for the Province in 1951, 1961 and 1966, as did the rate of growth between 1951 and 1966. The average income per household increased at a faster rate in the Niagara Region than it did in the Province between 1961 and 1966. The distribution of household income is shown on Figure 7.

Urban-Rural Income Differences The rural counties of Norfolk and Haldimand have a substantially lower level of income than the rest of the Region. Average personal income in 1966 was \$3,827 in Haldimand and \$4,193 in Norfolk, compared with the regional average of \$4,741. Incomes in these two counties are improving much less quickly than in the Region so that they are tending to fall further and further behind. Many factors are contributing to this. The rate of return to the agricultural sector is lower than for other sectors of the economy. Rural counties tend to have a greater number of people to be supported by one income than do urban counties; rural families tend to have more children, which together with the relatively unbalanced age structure, and the lack of job opportunities for workers in secondary industry tend to reduce average income levels in rural areas. In order to improve the income levels of such areas, it is important to improve the industry mix so that it will contain a greater proportion of high wage industries.

Income Levels in Urban Centres The five largest urban centres in the Niagara Region had very favourable income levels in

NIAGARA (SOUTH ONTARIO) DEVELOPMENT REGION DISTRIBUTION OF HOUSEHOLD INCOME BY COUNTY COMPARED WITH THE PROVINCE 1966



1966, higher in all cases than the county of which they are a part. Further, the cities of Hamilton, Welland and Niagara Falls in 1966 had income levels well above that of both the Region and the Province. Brantford had the lowest average personal income of the major centres, but its growth performance has been sufficiently encouraging to give no cause for alarm.

Income Levels in Manufacturing An examination of average wages and salaries per employee in manufacturing showed a high level of correlation between wages paid in manufacturing and average personal incomes. In both the Niagara Region and the Province as a whole, research indicated that those counties with a low average personal income were also those counties having a low manufacturing wage level. This may be explained by a combination of factors but low wage industries locate in low wage areas. Many low wage industries interviewed in the Niagara Region indicated that their locations were favourable so long as high wage industries did not move into their immediate area to capture the labour market. Similarly, industries requiring a high level of skill must locate in an urban setting where the skills are readily available. The fact that Lincoln and Wentworth counties have levels of both average personal income and average income per taxpayer above the regional average suggest that they have a very favourable industry mix.

Education

Introduction Recent studies suggest that education is one of the most significant variables in economic growth. The Economic Council of Canada, in its Second Annual Review, pointed out that the income of individuals is in general closely related to the extent of their schooling, and that the rates of return from increased investment in education appear to compare favourably with the returns from other kinds of investment. Not only does such investment in human capital benefit individuals through higher incomes and a better quality of life, but it also benefits the community in the increased productivity of its labour force. In addition, quality of labour is an important variable considered by industrialists when choosing a new location. Thus the level of educational attainment by the Region's adult population is a reflection of the present labour quality, and the existing school population structure and the associated educational facilities are indicative of the potential of the Region's prospective labour force.

Educational Levels in the Adult Population In Ontario in the period 1951 to 1961 there was a general improvement in the educational level of the adult population. The Region, however, fell behind the Province in raising its level of educational achievement, particularly with regard to its proportion of highly

educated persons essential to the continued economic growth in any industrial economy. (See Table 6 in the Statistical Appendix to this report)

In the adult population, the proportion of those with only Grade 8 education or less declined more slowly in the Region than in the Province over this period and the proportion of those with Grade 13 and over grew less quickly. However, an examination of the 15 to 19 age group indicated that it was the only one with a better educational structure than the Province. As this and younger groups move upwards through the educational system and into the general population, the disparities between the Region and the Province will tend to disappear.

This poor educational structure in 1961 might be due to a number of factors including poorer attainment of those in school before 1961, out-migration of the better educated members of the population, or the in-flow of less well educated migrants. Professor Stephen Rodd in Small Area Migration Experience in Southern Ontario, 1951 to 1961, states that in the Niagara Region, excluding Norfolk County, there was a considerable excess of in-migration from 1951 to 1961. This suggests that the explanation lies in some combination of the first and third factors listed above.

It is, however, the intra-regional differences which are

particularly significant for regional development as considerable variations exist within the Region in the educational level of the adult population. The County of Lincoln closely approximates the provincial average in years of schooling. Norfolk and Haldimand, however, show a marked deviation from this average, and considerably reduce the educational level of the Region as a whole because about half of their combined adult populations have only eight years or less of schooling.

Educational Levels in the School Age Population When the attainment of those attending school in the Region from 1962 to 1966 is examined using survival rates, it can be seen that the Region had a lower than average survival rate of students reaching Grade 12 by 1966, but that a higher proportion of these went on to Grade 13 or beyond. (See Table 3.4). The performance of children in the rural areas is approximately the same as that of children in the urban centres.

Student-teacher ratios can be an important indication of the quality of education in a given area. A low ratio may improve the quality of education by providing greater individual attention to the children and perhaps offering a wider range of courses. For the Region as a whole, secondary schools have the same student-teacher ratio, 18 per teacher, as the Province, but elementary schools have a slightly higher ratio, 31 compared with 29. When

TABLE 3.4

SECONDARY SCHOOL SURVIVAL RATES, NIAGARA REGION AND PROVINCE OF ONTARIO, 1962 TO 1966

		1962	1963	1964	1965	1966
		<u>Grade 9</u>	<u>Grade 10</u>	<u>Grade 11</u>	<u>Grade 12</u>	<u>Grade 13</u>
		No.	No.	No.	No.	No.
		(1)	(2)	(3)	(4)	(5)
BRANT	No.	1,500	1,197	967	810	458
	% ^a	100.0	79.8	64.5	54.0	30.5
	% ^b			80.8	83.8	56.5
HALDIMAND	No.	644	499	385	317	159
	% ^a	100.0	77.5	59.8	49.2	24.7
	% ^b			77.2	82.3	50.2
LINCOLN	No.	2,338	1,934	1,694	1,445	837
	% ^a	100.0	82.7	72.5	61.8	35.8
	% ^b			87.6	85.3	57.9
WELLAND	No.	3,307	2,807	2,369	2,004	886
	% ^a	100.0	84.9	71.6	60.6	26.8
	% ^b			84.3	84.6	44.2
WENTWORTH	No.	5,980	5,004	4,116	3,377	1,963
	% ^a	100.0	83.7	68.8	56.5	32.8
	% ^b			82.3	82.0	58.1
NORFOLK	No.	920	755	641	547	255
	% ^a	100.0	82.1	69.7	59.5	27.7
	% ^b			84.9	85.3	46.6
TOTAL, NIAGARA REGION INCLUDING NORFOLK COUNTY	No.	14,689	12,196	10,172	8,500	4,558
	% ^a	100.0	83.0	69.2	57.9	31.0
	% ^b			83.4	83.6	53.6
TOTAL, PROVINCE OF ONTARIO	No.	114,665	99,040	77,922	67,282	35,007
	% ^a	100.0	86.4	68.0	58.7	30.5
	% ^b			78.7	86.3	52.0

^aSurvival rate calculated with 1962 = 100.^bCumulative survival rate calculated with previous year = 100.Source: Calculated from Secondary School Enrolment Projections, Ontario Institute for Studies in Education.

elementary schools are divided into Public and Roman Catholic Separate Schools, it may be seen that the former conform more closely to the provincial average than the latter which have much higher ratios. This may reflect the financial problems faced by a minority who wish to provide a separate educational system for their children.

There is no significant difference in the student-teacher ratios between urban and rural counties even though schools in the former tend to be larger. However, it may be suggested that because there are eight secondary schools in Norfolk and Haldimand combined to serve an area of 1,122 square miles, compared with 22 schools in Wentworth to serve an area of 458 square miles, children in rural areas are disadvantaged with regard to the distance they have to travel to school.

Further investigation is needed to determine whether the smaller tax base in rural as compared with urban areas is resulting in a lower level of educational facilities. However, from the data available, a preliminary conclusion may be reached that it is socio-economic factors rather than differences in educational opportunities that have caused lower education levels in the adult population of rural areas.

Educational Facilities and Programs The Region is well-

endowed with post-secondary educational institutions, having two universities, two expanding community colleges, two teachers' training colleges, a considerable number of hospitals with training facilities, and a variety of private commercial and technical schools. However, almost all facilities are concentrated in the urban counties of Wentworth, Welland and Lincoln, particularly in Hamilton and St. Catharines, leaving students from rural areas no choice but to travel considerable distances or to move.

There is also a greater emphasis in the Region on Business and Technology Courses rather than on Arts and Science Courses, and this is perhaps related to the employment opportunities available in local industry.

Projections prepared by the Ontario Institute for Studies in Education show that in all counties enrolment in secondary schools will increase until 1977-1978 at which time numbers will start to decline. A total increase of 46.6 per cent is forecast between 1966 and 1981. A slight shift is also forecast between the counties, suggesting that the rural areas will account for a decreasing share of the secondary school population by 1981, with Lincoln and Welland having slightly larger shares than at present.

In conclusion, performance rates of school children vary little from county to county at both the elementary and secondary

levels; Roman Catholic Separate Schools have poorer student teacher ratio for some counties. At the post-secondary level, the Region is well provided for but the institutions of higher education are concentrated mainly in Lincoln, Welland and Wentworth, the most urbanized counties.

Although the level of educational attainment of the adult population of the Region as a whole is below the provincial average, the performance rates of school children are slightly better. Norfolk and Haldimand have the lowest attainment levels but the anticipated developments at Nanticoke will create additional employment opportunities which may encourage school leavers and others who might otherwise migrate, to stay within these counties. Thus, the level of attainment for these counties can be expected to increase as development proceeds. Provided that the Region does not lose a significant proportion of the better educated students graduating from the Region's educational institutions, the educational levels of the labour force may be expected to improve in future.

Public Safety

The level of public safety in the Niagara Region was analysed, concentrating in particular upon the incidence of accidents, crime and fires.

Table 3.5

Annual Average Traffic Fatalities
Niagara Region, 1961 to 1966

Number of Traffic Fatalities per 100,000 vehicles, 1961-1966	Lincoln and					Niagara Region	Province of Ontario
	<u>Wentworth</u> Zone 1	<u>Welland</u> Zone 2	<u>Brant</u> Zone 3	<u>Haldimand</u> Zone 4	<u>Norfolk</u> Zone 5		
	56	56	71	70	103	61	62

Source: Province of Ontario, Vital Statistics for 1961 to 1966,
Queen's Printer.

Traffic fatalities are recorded according to the place of residence of the victim, and it is apparent from the death statistics that residents of the rural counties of Brant, Haldimand and Norfolk have a much higher fatality rate in automobile accidents than do people from the more urbanized counties. Since the majority of trips made by car are over relatively short distances, the fatality rates may be related to the poorer roads in rural areas, to the higher speeds at which vehicles are travelling, and to the great delays before the victims receive medical or hospital services.

Drownings were used as a measure of recreational accidents. Fatalities from drowning are also recorded by place of residence, so do not include tourists visiting the Niagara Region.

Table 3.6

Drowings in the Niagara Region, 1966

	<u>Wentworth</u> Zone 1	Lincoln and <u>Welland</u> Zone 2	<u>Brant</u> Zone 3	<u>Haldimand</u> Zone 4	<u>Norfolk</u> Zone 5	<u>Niagara</u> <u>Region</u>	Province of <u>Ontario</u>
Number of Drowings per 1,000,000 population	30	52	55	67	20	42	47

Source: Province of Ontario, Vital Statistics for 1966, Queen's Printer.

It is apparent that the residents of Haldimand County had a much higher accident rate from drowning than the Provincial average, while the rates for Norfolk and Wentworth are substantially lower.

Table 3.7

Occupational and Other Accidents,
Niagara Region, 1966 and 1968

	<u>Wentworth</u> Zone 1	Lincoln and <u>Welland</u> Zone 2	<u>Brant</u> Zone 3	<u>Haldimand</u> Zone 4	<u>Norfolk</u> Zone 5	<u>Niagara</u> <u>Region</u>	Province of <u>Ontario</u>
Fatal industrial accidents per 1,000,000 labour force, 1968	72	111	59	93	456	108	101
Non-fatal accidents per 1,000 labour force, 1968	36	36	33	27	27	35	41
Other accidental deaths per 100,000 population, 1966	34	34	38	27	45	35	36

Source: Special Tabulation, Workmen's Compensation Board, 1970.
Province of Ontario, Vital Statistics for 1966, Queen's Printer, 1966

In the Niagara Region, all areas have a lower ratio of industrial accidents per labour force, than does the Province as a whole. It is apparent, however, that rural areas particularly Norfolk County tend to have a high incidence of fatal industrial accidents, while the non-fatal accidents are concentrated in the more urbanized parts of the Region.

An evaluation of all other accidental deaths, excluding traffic accidents and deaths by drowning, shows that Norfolk County has a rate appreciably above the provincial norm, while Haldimand County is substantially below. This category includes a variety of causes of death, such as poisoning, firearms, falls, homicide, suicide and explosions.

Table 3.8

Crime in the Niagara Region, 1967-1968

	<u>Wentworth</u> Zone 1	<u>Lincoln and Welland</u> Zone 2	<u>Brant</u> Zone 3	<u>Haldimand</u> Zone 4	<u>Norfolk</u> Zone 5	<u>Niagara Region</u>	<u>Provi of Ontar</u>
Number of reported crimes per 1,000 population	64	45	30	14	25	50	49
Number of police per 1,000 reported crimes	21	37	47	87	51	29	33
Number of police per 100,000 population	134	167	144	120	127	146	164

Source: Ontario Police Commission, Consolidation of Criminal Statistics, Ontario Provincial Police, 1967 to 1968
Department of Justice, Special Tabulation, 1968.

Only in Wentworth County does the incidence of reported crime per capita exceed the provincial norm. It should be noted that crimes are reported by place of occurrence rather than by place of residence. Brant, Haldimand and Norfolk counties have very low crime rates. This relative peacefulness has required fewer police per capita in the more rural counties of Brant, Haldimand and Norfolk and permitted a higher ratio of police per reported crime. In Wentworth County, however, both the number of police per reported crime and per capita are below the provincial average, suggesting the need for more police in Wentworth County. There are no significant differences in the types of crimes committed in the various parts of the Niagara Region.

Table 3.9

Fires in the Niagara Region, 1965 to 1969

	<u>Wentworth</u> Zone 1	Lincoln and <u>Welland</u> Zone 2	<u>Brant</u> Zone 3	<u>Haldimand</u> Zone 4	<u>Norfolk</u> Zone 5	<u>Niagara</u> <u>Region</u>	Province of <u>Ontario</u>
Annual average no. of fires per 1,000 dwellings, 1965 to 1969	11	13	10	12	12	11	11
\$ value of pro- perty damage per dwelling, 1969	\$20	\$29	\$18	\$39	\$30	\$24	\$25
Annual average no. of fatalities from fire per 1,000,000 population, 1965 to 1969	-	15	-	466	40	24	24
- Nil							

Source: Fire Marshall, Annual Report, Department of Justice, 1969.

The incidence of fires per dwelling in the Niagara Region approximated the provincial average for the period 1965 to 1969. In all the indicators shown on the table, Brant and Wentworth counties had below average rates compared with the Province. Haldimand, Norfolk and Lincoln and Welland counties had high levels of property damage. The remarkably high fatality rate in Haldimand County was due to two factors, first, the small population of the County, and second, a serious fire at the Victoria Hotel in Dunnville in which 13 people were killed and two injured.

Health

The level of provision of health facilities such as hospitals and clinics, and the distribution of doctors and dentists, are significant indicators of intra-regional disparities in the social and cultural infrastructure of a region, particularly when evaluated in association with data on such factors as educational and cultural facilities.

In Ontario in 1966, there were 759 people per doctor, and 2,661 people per dentist. When these figures are compared with the Niagara Region, in which there were 821 people per doctor and 2,921 per dentist, it is apparent that the Region is rather less well provided for than is the Province. On a county basis, only the inhabitants of Wentworth County have a higher level of service than do the people of Ontario. It is particularly significant that the rural counties of Norfolk and Haldimand are almost twice as

badly off as Wentworth.

Data by urban centre were available only for doctors, but this information does reveal considerable disparity within the Region. A doctor should be within easy reach of everyone. In the Niagara Region, however, 80 per cent of the doctors live in the six major centres of Hamilton, Burlington, St. Catharines, Brantford, Niagara Falls and Welland, which account for 65 per cent of the Region's population. In contrast, the counties of Norfolk and Haldimand which account for eight per cent of the Region's population have only five per cent of the Region's doctors, and of the doctors in these two counties, over half are located in Simcoe or Dunnville, leaving the small centres very poorly provided for. Tillsonburg, in the Lake Erie Development Region, provides medical services for people living in the northwestern parts of Norfolk county.

In 1966, the ratio of population to hospital beds for the Province was one bed per 156 people. The level of provision in the Region was almost the same, one bed per 155 people. Both Brant and Wentworth counties had a better level of provision than this, while Haldimand and Norfolk were significantly worse, 221 persons and 331 persons per bed, respectively. More significant than county ratios, however, is the distance people have to travel to reach a hospital, since people are not influenced by county

boundaries in their choice of a hospital, but by proximity and facilities available. All centres over 5,000 population in the Region have at least one hospital, except for Dundas and Stoney Creek, which are very near Hamilton. Unfortunately, most centres of under 5,000 people do not have a hospital, so that people living in rural areas in the southwest must travel much further than urban residents in the northern parts of the Region.

Recreation

Tourism has been one of the fastest growing sectors of the provincial economy in recent years, accounting for approximately 10 per cent of the Gross Provincial Product.⁵ As one of the most popular tourist areas in the Province, the Niagara Region has not only participated in this growth, but has also been in part responsible for it. This is clearly demonstrated by the fact that income generated by tourism in the Niagara Region is estimated to be about six times higher than the provincial average.⁶

The reasons underlying Niagara's impressive performance in this sector of the economy are well known: the Region is well

⁵ Ontario Economic Council, Ontario Tourist Industry, December, 1965

⁶ Ontario Department of Tourism and Information, Short Report No. 37, Travel Research Branch, May, 1969.



figure 8

endowed with interesting and famous natural and man-made amenities, it is centrally located with respect to its markets, and it is readily accessible. The accessibility factor is strengthened by the fact that the Queen Elizabeth Way is the major Toronto-Buffalo transportation linkage, thus ensuring high visitation rates to the Region independent of those motivated by tourist considerations. Insofar as non-tourist visits tend to generate spending activity in many of the same service facilities as tourist visits do, the directly beneficial effects of non-tourist visitors to the tourist industry should not be treated lightly.

Recreational Amenities The Niagara Region has an attractive landscape. Its main features are its Lake Erie and Lake Ontario shoreline, the Niagara River and Falls, the Escarpment and the Grand River Valley. Also, as one of the oldest settled areas in the Province, Niagara has a cultural significance. It features border forts along the Niagara River and a number of well preserved early farm houses and buildings. Modern technology provides interesting attractions in the Welland Canal and the power plants of the Hydro-Electric Power Commission of Ontario at Niagara Falls. Tourist and recreational activities have tended to focus along the Lake Erie shoreline and around Niagara Falls. (See Figure 8). However, the Region is not one where visitors tend to engage in specific activities to the exclusion of all others, but is one of more general interest as is shown by responses to a questionnaire

TABLE 3.10

Main Reasons for Tourists Visiting the Niagara Region, 1967

	<u>U.S. Visitors</u> %	<u>Canadian Visitors</u> (excludes Ontarians) %
Scenery and Natural Beauty	22.3	7.3
Quiet Relaxation	19.0	11.3
Touring the Province	15.9	39.9
Attending in Special Event	9.0	8.1
Visiting Cities	8.0	9.3
Honeymoon	5.3	4.0
Pleasant Summer Climate	3.9	6.5
Historic Sites	2.9	2.8
Camping	2.3	5.2
Business	1.7	1.2
Fishing and Hunting	0.6	-
Water Sports	0.5	-
Other	8.6	4.0
Total	100.0	100.0
Sample Size	2,613	248

Source: Ontario, Department of Tourism and Information, Visitors to Ontario Government Reception Centres, Report No. 37, December 1968.

answered by United States and Canadian Visitors to the Region in Table 3.10.

Recreational Demand The Niagara Region is easily accessible to the populated areas of both Ontario and New York. The peninsula acts as a land bridge across the Southern Great Lakes System and fast through-routes on both sides of the border ensure that the Region would be frequently visited even without its tourist attractions. Also, the Region lies across an axis of rapid population growth. The population of the area extending from Toronto to the Niagara River is close to three million and is expected to reach seven million by 1980. Moreover, between one-third and two-thirds of the total trips made in this area were for recreational and social purposes.⁷ These factors combine to create very heavy

TABLE 3.11

Origin of Visitors to the Niagara Region, 1967⁸

	<u>Number of Visitors</u>	<u>Per cent</u>
Ontario	5,523,285	41.6
United States	6,976,102	52.6
Other Provinces	<u>772,893</u>	<u>5.8</u>
Total	13,267,280	100.0

Source: Travel Research Branch, Ontario Department of Tourism and Information May, 1969, Short Report No. 37.

⁷Ontario Department of Highways.

⁸Data for Norfolk County were not available.

pressure on the recreational resources of the Niagara Region.

The Niagara Region is very much an international resort area, and the proportion of American to Canadian visitors is one of the highest in the Province.

The breakdown of visitors' participation in specific activities can be found in Table 3.12. Unfortunately, data were not available on Norfolk County, and only the lakeside townships have been included.

TABLE 3.12

<u>Canadian and American Visitors to the Niagara Region, 1964</u>			
	<u>U.S.</u> %	<u>Canadian</u> %	<u>Other</u> %
Day Visitor to Rock Point Provincial Park	16.4	83.6	-
Camper at Rock Point Provincial Park	42.9	57.1	-
Cottage Owner - Lake Erie	47.0	53.0	-
Cottage Owner - Lake Ontario, Niagara River	5.8	94.2	-
Guest at Commercial Resorts - Lake Erie	69.2	30.8	-
Guest at Commercial Resorts - Lake Ontario, Niagara River	80.5	18.7	0.8

Source: Wolfe R.I., Parameters of Recreational Travel in Ontario, Ontario Department of Highways, Report No. RB111.

Along the Lake Ontario shoreline cottage ownership is

predominantly Canadian while ownership along the Lake Erie shoreline is evenly divided between Canadians and Americans. Day visitors to Rock Point Provincial Park are mainly Canadian and more than half of these come from the Niagara Region.

Ontario residents with trip destinations in the Niagara Region to a very large extent come from the Metropolitan Toronto and Niagara Regions as shown in the following table. (Data for Norfolk County are included in the Lake Erie Region figures).

TABLE 3.13

Origin of Visitors (Ontario Residents) with Trip Destinations
In the Niagara Region, June 15, 1966 to June 14, 1967

<u>Origin</u>	<u>%</u>	<u>Number of Trips</u>
Central Ontario and Niagara Regions	80.0	1,364,536
Lake Erie, Lake St. Clair And MODA Regions	14.6	248,857
Georgian Bay and Lake Ontario Regions	2.6	44,518
Eastern Ontario Region	1.8	30,191
Northeastern and Northwestern Regions	1.0	17,568
TOTAL	100.0	1,705,670

Source: Ontario, Department of Tourism and Information, A Study of the Travel Habits of Ontario Households, June 15, 1966 to June 14, 1967, Report No. 24, Table VII.

However, it must be noted that these 1,705,670 trips include vacation trips, personal trips and business trips which are broken down as follows:

TABLE 3.14

Number and Purpose of Trips to Niagara Region
June 15, 1966 to June 14, 1967

<u>Purpose of Trip</u>	<u>%</u>	<u>Number of Trips</u>
Vacation	8.9	152,288
Personal	80.4	1,371,649
Business	10.7	181,733
TOTAL	100.0	1,705,670

Source: Ontario, Department of Tourism and Information, A Study of the Travel Habits of Ontario Households, June 15, 1966 to June 14, 1967. Report No. 24.

American visitors are a very important part of tourist industry. When compared to all visitors to the Region they are responsible for a very large proportion of visitors' expenditures as seen below.

The origin of American visitors to the area as noted below shows the wide drawing power of the Region.

Almost half of all non-residents' exits and entries to and from Ontario are made at the Niagara Frontier crossing.⁹

⁹D.B.S., Border Crossing 66-201, Annual

TABLE 3.15

Origin of United States Visitors, 1967

	<u>%</u>
Michigan	34.4
New York	9.5
Ohio	5.3
Pennsylvania	4.2
Illinois	4.8
New Jersey	2.5
Massachusetts	2.4
Indiana	2.4
Minnesota	0.8
Wisconsin	2.6
Other U.S.	18.3
	<hr/>
Total U.S.	87.2
Canada	12.8
	<hr/>
TOTAL	100.0

Source: Ontario, Department of Tourism and Information, Visitors to Ontario Government Reception Centres, Report No. 37, December 1968.

Table 3.16

Expenditures of Visitors, 1967

<u>Origin of Visitors</u>	<u>\$</u>	<u>%</u>
Ontario	36,887,199	15.8
United States	177,594,496	75.8
Other Provinces	19,685,662	8.4
	<hr/>	<hr/>
TOTAL	234,167,357	100.0

Source: Ontario, Department of Tourism and Information, Travel Research Branch, Short Report No. 37, May 1969.

(The trips cannot be distinguished as to purpose). Border crossings in both directions by non-residents have increased considerably (1961-1966) although Niagara's share of total Ontario crossings has declined slightly. The Niagara Frontier has maintained its relative popularity as an exit point for American visitors. The largest group, 83.4 per cent, cross and return at this point while 10 per cent travel to the Detroit Frontier and a small group leave by the St. Lawrence. A large proportion of American visitors stay two days or less and many of these are day trips.

Facilities for Visitors In 1965, 415 establishments with 9,422 units provided overnight tourist accommodation. Table 3.17 indicates the changes which occurred between 1955 and 1965.

TABLE 3.17

Tourist Establishments, 1955 and 1965 (Without Liquor License)¹

	1 9 5 5			1 9 6 5				
	No. of Establishments	Units	Average Size	Estimated Value (\$ '000s)	No. Of Establishments	Units	Average Size	Estimated Value (\$ '000s)
Brant	24	250	10.4	790	25	534	21.3	2,389
Haldimand	27	179	6.6	353	28	309	11.0	919
Lincoln	47	496	10.5	2,032	34	600	17.6	2,245
Welland	278	3,740	13.5	13,802	285	6,876	24.1	33,908
Wentworth	61	620	10.1	3,237	43	1,103	25.6	4,669
TOTAL	437	5,285	12.1	20,215	415	9,422	22.7	44,131

Tourist Establishments, 1955 and 1965 (With Liquor License)

	1 9 5 5			1 9 6 5				
	No. of Establishments	Units	Average Size	Estimated Value (\$ '000s)	No. of Establishments	Units	Average Size	Estimated Value (\$ '000s)
Brant	8	294	36.7	2,499	6	203	33.8	1,725
Haldimand	14	162	11.5	1,377	14	171	12.2	1,453
Lincoln	23	693	30.1	11,917	29	1,048	36.1	18,032
Welland	45	1,251	27.8	15,012	55	2,016	36.6	26,208
Wentworth	22	860	39.1	9,720	23	1,170	50.8	13,970
TOTAL	112	3,260	29.1	40,525	127	4,608	36.3	61,389

Source: Department of Tourism and Information, Where to Stay in Ontario, 1955, 1965.

Over the 10-year period there has been a five per cent decline or a loss of 22 in the total number of establishments in the Region. However, there has been slight increase in the number of establishments with liquor licenses.

Despite the decline in the number of establishments, there has been an increase in the number of units and the estimated value of establishments. Thus the scale of operations has increased. The average size of all establishments almost doubled in the ten years 1955-1965, from 12.1 to 22.7 units, and the average size of licensed establishments increased from 29.1 to 36.3 units. Establishments tended to be largest in Wentworth and Welland counties and smallest in Haldimand.

The growth in the number of units (in all establishments, both with and without liquor licenses) has been concentrated in Welland and Wentworth. Throughout the rest of the Region, numbers have increased slowly. Tables No. 3.18 and 3.19 show the occupancy percentage recorded during January and July in 1968 and 1969 from a sample of establishments within the Region.

Cottages Other facilities include cottages, campsites and parks. One of the more important cottage areas in Southern Ontario is along Lake Erie and much of its shoreline is occupied by cottage lots. These cottages are generally smaller and less

TABLE 3.18

Average Occupancy Of Tourist Establishments In The Niagara Region*
By Type Of Establishment-In Per Cent, January And July, 1968 And 1969

Year	Total All Types of Establishments %	Hotel		Hotel Not LLB		Motel		Lodge		Cottage		Cabin		Campsite		Other	
		Motor-hotel LLB %		Not LLB %		%		%		%		%		%		%	
1968	34	40		n.a.		27		1		n.a.		n.a.		2		n.a.	
1969	31	32		84		29		n.a.		n.a.		n.a.		n.a.		-	
-----J A N U A R Y-----																	
-----J U L Y-----																	
1968	67	64		n.a.		70		62		79		59		27		100	
1969	59	56		n.a.		59		75		96		69		n.a.		79	

- Nil

n.a. Not available.

*Data for Norfolk County were not available.

TABLE 3.19

Average Occupancy Of Tourist Establishments In The Niagara Region,*
By Type Of Establishment According To Number Of Rental Units Available - In Per Cent,
January And July, 1968 And 1969

J A N U A R Y										
Average Total Occupancy		Hotel		Hotel Not LLB %	Motel %	Lodge %	Cabin %	Cottage %	Campsite %	Other %
		Motor-Hotel LLB %								
30 or more Rental Units	1968	40		n.a.	30	n.a.	n.a.	n.a.	n.a.	n.a.
	1969	32		n.a.	14	n.a.	n.a.	n.a.	n.a.	n.a.
29 or less Rental Units	1968	40		n.a.	25	1	n.a.	n.a.	2	n.a.
	1969	34		84	36	n.a.	n.a.	n.a.	n.a.	-
J U L Y										
30 or more Rental Units	1968	67		n.a.	81	n.a.	n.a.	n.a.	10	100
	1969	60		n.a.	69	n.a.	n.a.	n.a.	n.a.	n.a.
29 or less Rental Units	1968	59		n.a.	63	62	59	79	85	n.a.
	1969	50		n.a.	54	75	69	96	n.a.	69

- Nil

n.a. Not available.

*Data for Norfolk County were not available.

Source: Ontario, Department of Tourism and Information, Ontario Tourist Establishment Occupancy, January and July 1969,
Report No. 43.

expensive than those on the Canadian Shield. As shown in the following table about 95 per cent of the rural residential customers who occupy the Niagara Region seasonally are found in the three counties along Lake Erie. Of these, Haldimand County contains the

Table 3.20

Ontario Hydro Residential Customers, 1969

<u>County</u>	<u>Seasonal Occupancy</u>	
	<u>No.</u>	<u>%</u>
Brant	9	0.2
Haldimand	2685	43.4
Lincoln	180	2.9
Norfolk	1849	29.9
Welland	1387	22.4
Wentworth	75	1.2
TOTAL	6185	100.0

Source: Ontario Hydro, Consumer Service Division, Rural Service Statistics.

greatest proportion by far. This could be due to the waterfront activities on the Grand River as well as the Lake Erie shoreline. Cottages are owned predominantly by people who live either within the Region or just outside of it; many of the large number of American owners are residents of Buffalo.

Camping As camping has become more popular, the number of commercial sites licensed in the Niagara Region has increased from 34 in 1965 to 82 in 1970. The number of tent and trailer sites within these campsites has expanded from 2,211 in 1965 to 7,422 in 1970.¹³ As seen in Table 3.21 Welland County has the greatest concentration of camping facilities with 38 per cent of the establishments and 27 per cent of the Region's campsite area. Haldimand and Norfolk counties also have a relatively large proportion of camping establishments. However, within Norfolk County there are two provincial parks accounting for 1,631 acres and 801 tent and trailer sites. Also in Haldimand County there are two provincial parks incorporating 215 tent sites and 343 acres.

Parks The Niagara Parks Commission system is the most important of all the Region's parks. It provides 3,500 acres and has over 13 million visitors per year. Also, there are four provincial parks all of which are located along the northern shore of Lake Erie. Together they include 1,974 acres as shown in Table 3.22 and in 1969 they were visited by a total of 589,089 people.

These parks all contain tent and trailer sites and facilities for swimming and boating. At Long Point there is a

¹³The 1965 figures do not include Norfolk County.

Table 3.21

Camping Facilities 1970¹⁴

<u>County</u>	<u>No. of Establishments</u>	<u>No. of Tent and Trailer Sites</u>	<u>Area (acres)</u>	<u>Area % of Total</u>
Brant	6	454	381	6.4
Haldimand	16	994	1,042	17.4
Lincoln	10	835	350.5	5.9
Norfolk	15	1,406	1,970.5	32.9
Welland	24	2,866	1,638.5	27.4
Wentworth	11	867	599	10.0
	—	—	—	—
TOTAL	82	7,422	5,981.5	100.0

Source: Ontario, Department of Tourism and Information, Ontario Campsites, 1970

migratory bird concentration and observation centre, and Turkey Point includes a nine-hole golf course.

There are two relatively large municipal parks, the Hamilton Botanical Gardens (1,900 acres) and Haldimand County park (90 acres). The other municipal parks are numerous but mainly serve more immediate local needs.

¹⁴These figures include provincial parks and conservation areas with camping facilities.

Table 3.22

Provincial Parks 1969

	<u>Area (in Acres)</u>	<u>Total Visitors</u>	<u>Campers</u>
Long Point	849	194,881	27,581
Rock Point	190	47,127	5,158
Selkirk	153	49,270	5,463
Turkey Point	782	297,811	13,049
	<hr/>	<hr/>	<hr/>
TOTAL	1,974	589,089	51,251

Source: Department of Lands and Forests, Parks Branch.

Summary and Conclusion The Niagara Region is recreation-ally and scenically unique and as a result attracts visitors from many parts of Canada and the United States. Tourism is one of the Region's prime resources and industries. Facilities for the tourist have expanded around the Niagara River and Falls and thus Welland County and to a lesser extent Lincoln County are particularly important. Demands on the recreational facilities are made by the people of the Region, the surrounding areas in Southern Ontario, and the nearby United States. This demand is felt in the growth of cottage areas, demand for picnic and bathing areas, for camping sites and regional parks, skiing areas and marinas, pleasant drives and lookout points. The Niagara Region is one of the greatest

earners of tourist dollars in the Province. The increasing demand for recreation has spurred the expansion of tourism and is of great importance to the economy of the Niagara Region.

CHAPTER IV

THE ECONOMIC BASE

INTRODUCTION

The purpose of the economic base study of the Niagara Region is to gain a comprehensive understanding of the structure and functioning of the regional economy. This study is fundamental to the preparation of detailed regional development plans. The Niagara Region's primary, secondary and tertiary sectors have been analysed, their problems isolated, and the implications for future economic development assessed. Particular importance has been placed upon identifying those manufacturing industries that are basic, or export-oriented, and whose performance is therefore an important determinant of future regional growth. A survey of manufacturing establishments in the Niagara Region was carried out by the Regional Development Branch in 1969 and 1970 to obtain detailed and up-to-date information on the current performance of the manufacturing sector. A sample of firms in the 15 largest urban centres in the Region of over 5,000 population, was interviewed. The survey covered over 45 per cent of the Region's manufacturing employment and the sample of firms interviewed was stratified to cover both the largest urban centres and the 20 major industrial groups in the Region. A detailed report on the

findings of this survey may be found later in this chapter.

PRIMARY INDUSTRIES

The primary sector of the economy is customarily defined as consisting of those industries that are concerned with obtaining raw materials. These raw materials are either sold directly to the consumer, or used as inputs into secondary manufacturing. The most important primary activity in the Niagara Region is agriculture, followed by mining. Fishing and forestry play only a minor role in the regional economy.

Agriculture

General Characteristics Southern Ontario is the most prosperous agricultural area in Canada, with the Niagara Region occupying a strategic location close to major urban markets. The agricultural sector in the Region is exceedingly complex, with considerable local variations due both to environmental factors such as climate and soil, and to socio-economic factors, particularly land prices and proximity to growing urban centres. Many of the Region's problems are common to the agricultural sector, while others require solutions which are local in nature.

Agriculture is a basic or export oriented industry in the counties of Brant, Haldimand, Lincoln and Norfolk, as revealed by location quotients of 1.30, 3.47, 1.36 and 6.10 respectively.

The marketing of the Region's agricultural products, particularly such specialized crops as fruit and tobacco, is not confined to the Region itself, but extends throughout the whole of Ontario and other parts of Canada.

In an industrialized and rapidly urbanizing region such as Niagara, the agricultural sector would be expected to decline in relative importance as the manufacturing and tertiary sectors increased. In Ontario between 1951 and 1961, the labour force in agriculture declined by 16 per cent, from 11 per cent of the provincial total to 7 per cent. In the Niagara Region, however, there was only a 3.5 per cent decline in agricultural workers over the same period, with the Region in 1961 having a greater proportion of its labour force in agriculture than the Province. This suggests that the Region's considerable importance as an agricultural area is likely to continue. Within the Region, the increase or very slow decline in the agricultural labour force in the more specialized agricultural counties of Norfolk, Brant and Lincoln offset the more rapid declines in Haldimand and Welland.

Analysis of selected agricultural indicators reveals that two broad trends have been taking place within the Region. First, there has been considerable pressure upon agricultural land around urban areas. In 1951, over four-fifths of the 1.75 million acres of land in the Region were farmland. By 1966 this had declined

to below three quarters. The second trend has been towards intensification of agriculture in many parts of the Region.

Table 4.1

Percentage Change in Selected Agricultural Indicators, 1951-1966

	Niagara Region % (1)	Province of Ontario % (2)
Number of Farms	-20.5	-26.7
Land Area of Farms	- 9.8	-14.6
Average Size of Farms	13.5	16.4
Value of Agricultural Products Sold	108.2	76.1

Source: Canada, Dominion Bureau of Statistics, Census of Canada, Agriculture, 1951 and 1966, Tables 16 and 28, and Tables 13 and 23.

The above table shows that although the number of farms and their total land area were declining, that decline took place much less quickly than in the Province as a whole. At the same time, the average size of farms in the Region grew by 13.5 per cent, and the value of agricultural products sold increased by 108 per cent, compared with the 76 per cent increase for Ontario over the same period.

Intra-regional trends There are considerable intra-regional variations within the broad regional trends outlined

above. Within the mixed farming of the Niagara Region, there are two very important areas of local specialization, the fruit belt north of the Escarpment, and that part of the tobacco growing belt that extends into Norfolk and Brant counties. Specialized fruit growing is found to an increasing extent in Brant and Norfolk counties.

Norfolk and Brant counties contain some of the most prosperous agricultural areas in the Region as measured by the value of agricultural products sold per acre of improved farmland, \$238 and \$162 respectively. These two counties grow 55 per cent of Ontario's tobacco; livestock raising is of secondary importance in Brant. In both Norfolk and Brant counties there have been increased acreages of improved farmland in the northern and western townships. This increase parallels the provincial trend. Another indication of improved farming in this area was the decline in the number of commercial farms in relation to the area of improved farmland, resulting in a 29 per cent increase in farm size in Brant, and a 16 per cent increase in Norfolk. At the same time, some marginal farms went out of production. Both farm capital value and value of field crops sold increased significantly, reflecting this trend towards larger, more capital intensive enterprises.

The County of Haldimand, together with neighbouring townships along the Lake Erie shoreline, comprise the poorest agricultural area in the Niagara Region. Farming here consists

mainly of the raising of livestock, pigs, sheep, horses, beef and dairy cattle, and is associated with some of the largest, yet poorest, farms in the Region. In 1966, the value of agricultural products sold per acre of improved farmland was only \$62. The increase in the number of commercial farms between 1961 and 1966 was insufficient to offset the decline in small scale and residential farms, resulting in 133 farms going out of production in the five years. In several townships in this area, the acreage of improved farmland increased between 1951 and 1966, while total acreage of farmland declined, suggesting that with rationalization, the area does have considerable agricultural potential. In such areas, where levels of income are low and out-migration is dominant, the introduction of alternative economic activity would offer marginal farmers the opportunity of fitting into an urban pattern. If living within commuting distance of an urban centre farmers could, with the help of retraining, take advantage of any job opportunities available.

The greatest pressure on agricultural land is not, as is usually supposed, around Hamilton and along the Lake Ontario shoreline, severe though this pressure is. Agricultural data reveal that the area of greatest pressure is in the eastern section of the peninsula around St. Catharines, Niagara Falls and Welland. In many of these townships, more than 20 per cent of the

improved farmland was converted to other land uses between 1951 and 1966. In the agricultural land remaining, there are indications of a decline in the relative importance of fruit and vegetable farming, and an increase in the importance of poultry. The number of farms declined by 31 per cent in this area, but the decline in total farmland was less severe. This suggests that there is an intensification of the farming that remains, in order to serve the demands of the growing urban population for agricultural products.

The presence of urban shadow around cities is suggested by the 165 per cent increase in the market value of land and buildings in Welland County over the 15 year period 1951 to 1966. Similar forces are at work in the area surrounding Hamilton and Burlington. Their physical expansion is limited by the Escarpment to the south and west. In neighbouring townships there has been up to one third decline in the acreage of improved farmland in 15 years. The number of farms has declined by 27 per cent while the market value of land and buildings has increased by over 200 per cent, suggesting extensive urban shadow similar to that in the eastern peninsula.

The Fruit Belt For many years, there has been increasing public concern, both among the people of Ontario and among the inhabitants of the Niagara Region about the encroachment of urban land uses upon the fruit lands of the peninsula. Two major reports

on this problem have been undertaken for the Regional Development Branch. Within the Branch, the Niagara Escarpment Study, Fruit Belt Report¹ was completed in August, 1968, under the direction of Professor L. O. Gertler. In March 1969, the Niagara Region Agricultural Research Report: Fruit Belt² by Professor L. G. Reeds, became available.

The Niagara Region's unique combination of soils, climate and physical setting for fruit growing are well known. The basic fact is that the tender fruit soils are limited in extent. Of the original 40,000 acres, only 26,300 were left for full-time fruit growing by 1965. The Fruit Belt Report estimated that if present trends continue, the built up area will double in extent by 1996. By this time, 51,800 acres of additional urban land will be needed, particularly for residential expansion. The total needs for the area, including those for agriculture, will be 40,000 acres more than the total land available. Under such conditions, the fruit belt will inevitably disappear. Existing municipal policies and plans, as outlined in the Niagara Escarpment Study, appear to be accelerating this process.

Both studies indicate that the core of the problem lies

¹ Niagara Escarpment Study Group, Niagara Escarpment Study: Fruit Belt Report, Regional Development Branch, Department of Treasury and Economics, Aug. 1968.

² L. G. Reeds, Niagara Region Agricultural Research Report: Fruit Belt, McMaster University, Hamilton, Ontario, March, 1969.

in the process of "rurbanization", consisting of the creation of land uses that are on a continuum between urban land uses and full-time farming. As the urban areas increase, so the land prices on their fringes increase, and many undesirable side effects result. In addition to the loss of agricultural land, urban pressures result in poor land management practices, and the removal of vegetation. Construction in flood plains and on hazard lands in general also contributes to environmental deterioration. Farms become subdivided into uneconomically small units. Land speculation causes farmland to lie idle and deteriorate in quality, possibly becoming affected by disease, weeds and insect pests. The more profitable farms cannot afford to expand, and are adversely affected by the deteriorating quality of nearby land. The declining rate of returns from fruit production resulting largely from fruit prices rising less quickly than production costs, together with the importing of wine and canned fruit from areas outside Ontario have caused a loss of confidence on the part of farmers in the future of their industry, and a corresponding unwillingness to invest in improvements.

While it is already too late to preserve many areas of farmland, drastic action should be taken to ensure the survival of those areas which are still economically viable.

Fruit farming is only competitive with other land uses so long as land prices per acre do not exceed \$2,262, according to Professor L. G. Reeds. Only in Clinton, Niagara and Pelham townships are land prices still less than this. Professor L. G. Reeds recommends strongly that the core areas of tender fruit land,

approximately 10,240 acres of first class land in the townships of Clinton, Louth, Niagara and Pelham, be preserved. As yet, these farms are in general unaffected by urban sprawl, and still well managed. Also recommended are measures to stimulate fruit farming such as anti-dumping regulations, tax reductions, loans and further research into diseases and the development of new varieties of fruit.

Conclusion The agricultural land in the Niagara Region is generally of very high quality, with particular locational and environmental advantages for specialization. However, it is also an area of considerable land use conflicts, in which non-agricultural uses promise immediate and higher returns. The major problem in the Niagara Region is therefore, not a decline in agriculture as such, but rather the need to preserve, where economically desirable, the areas of highest potential for agriculture.

Mines, Quarries and Oil Wells

General Characteristics The Niagara Region accounted for only 3 per cent of the total value of mineral production in Ontario in 1966. This small proportion, however, amounted to 100 per cent of Ontario's gypsum, 25 per cent of its natural gas, and 13 per cent of its structural materials.

In the Niagara Region, the mining industry, as defined

by the location quotient, is essentially a non-basic industry with some export oriented sectors. Only Haldimand County has a location quotient close to unity in 1961, due to the production of gypsum.

In terms of employment, this sector is relatively unimportant. In 1961 employment in mines, quarries and oil wells represented only 972 persons or 0.3 per cent of the Region's labour force.

The value of mineral production, however, has continued to rise and, in 1966, reached a total of \$28.6 million. This represented an increase of 46.5 per cent during 1961 to 1966. On a county basis, Welland accounted for 42 per cent of mineral production by value, consisting mainly of structural materials, and Wentworth and Haldimand for 17 and 14 per cent respectively.

Structural Materials The mining of structural materials, much of which is open pit mining, is directly related to the geology of the Niagara Escarpment. The Queenston Shale, which seems to have unlimited reserves, is used in the manufacture of pipes, tiles and bricks. In order to minimize transport costs, quarries and related manufacturing plants tend to locate near the local market, especially that of Hamilton. Shale has, to a great extent, replaced clay as a major raw material in the manufacture of building products. Seven companies were reported in operation in 1966 in Hamilton,

Brantford and St. Catharines.

Limestone using industries based upon dolomite are also important. While their location is primarily affected by major markets especially that of Toronto, they do serve the whole Province with building stone. In this respect mining may be considered as a basic or export oriented industry in the Niagara Region, although the location quotients for mining, which are below unity in every county appear to contradict this. Crushed and cut stone for construction are also produced in the Niagara Peninsula. Other structural materials include sand and gravel for building purposes, from all counties except Lincoln. Trap and granite are produced in Hamilton and quicklime in Niagara Falls. Cement was no longer made in the Niagara Region in 1968.

It should be noted that a comprehensive study of structural materials was carried out by Professor A. M. Bauer, University of Guelph, Professor A. M. Blair, York University, and Professor P. F. Karrow of the University of Waterloo as part of the Niagara Escarpment Study.³

Minerals Gypsum is the only non-metallic mineral produced in the Niagara Region and this is concentrated in Haldimand County. Since 1953, gypsum has been a leading export. The demand

³Extractive Industries Study Group, The Niagara Escarpment Study Report on the Extractive Industries, Regional Development Branch, Department of Treasury and Economics, May 1969.

for this mineral is dependent on the construction industry where it is used in plaster, wallboard and other items.

Fuels Natural gas fields underlie Norfolk, Haldimand and Welland counties. There were over 1,500 active wells in the Niagara Region in 1968, and this accounted for 29 per cent of Ontario's natural gas production, compared with 25 per cent in 1966. The major proportion of this was produced in Norfolk County.

Petroleum production is centred mainly in Brant County, since part of the Gobles field lies in Burford and Blenheim townships. There were 39 active wells in 1968. During the period 1964 to 1968 there was a general decrease in oil production in this area of approximately 50 per cent.

The reserves of fuel in the southern counties of the Niagara Region appear to be very minimal. Estimates have been made that already over 75 per cent of the reserves have been used up. Some small offshore pools which have recently been located appear to be more promising than the onshore deposits.

Within the Niagara Region, one may conclude that (a) the future of the mining of structural materials depends upon a steady and increasing demand for these materials from roads, housing and general construction; (b) the reserves of structural materials are expected to last for a few more decades provided that there is controlled extraction in the face of increased

demand; (c) there is great conflict between the economic importance of mining and quarrying, and the recreational and aesthetic use of land in the Escarpment areas near the main markets; (d) there is need for alternative sources of employment and income for the workers in the fuel industries in the almost depleted fuel producing areas in the southern counties.

Forestry

General Characteristics Forestry in the Niagara Region is generally of limited economic significance. Such forestry as exists is concentrated in Norfolk County where 82 persons were employed in 1961, and in Wentworth County where 34 persons were employed.

Historically, Norfolk County has been important for forestry both in terms of production of superior quality pine, and in later deliberate attempts at reforestation of sandy soils. Originally white pine, oak, chestnut and other valuable hardwoods were produced in Charlotville and Walsingham Townships. With the removal of the forest cover and the subsequent impoverishment of the soils through farming practices, reclamation and forest management became important to the area. In 1908, the first provincial forest station was established at St. Williams for the propagation of seedlings and as an object lesson in the reclamation of submarginal lands.

Well aranged woodlots would enhance the quality of the Region. They would:

(a) Provide recreational opportunities.

- (b) Help to control soil erosion due to flooding especially in Haldimand and Norfolk counties and in other agricultural areas.
- (c) Windbreaks in sandy areas would reduce wind erosion.
- (d) Timber production for economic purposes is possible in the Niagara Region. The area is capable of producing high quality hardwoods e.g. walnut.
- (e) Enhance the Region's natural beauty and aesthetic qualities.
- (f) Afford environmental protection for fish, wildlife species and water bodies.

The wood-based industries, of which there are a considerable number in the Niagara Region, are discussed in greater detail later in this chapter. They are, however, largely dependent upon softwoods imported from Northern Ontario, the Maritimes and British Columbia.

Commercial Fishing

General Characteristics Fishing is a traditional industry in the Great Lakes and one which in recent years has run into considerable problems, including low prices and water pollution. In the Niagara Region, almost all fishing occurs in Lake Erie, which is itself the most important of the Great Lakes for fishing. The section of the lake lying off Haldimand, Norfolk and Welland is not so important as the United States waters, but is of considerable local significance.

In terms of labour force, fishing plays a minor role in Ontario's economy, less than 0.1 per cent of the provincial labour force being employed in that activity. In the Niagara Region, fishing is also insignificant in terms of employment. As recorded from fishing licences, 253 men were recorded as fishermen in 1961, of whom 236 lived in the counties of Norfolk and Haldimand, especially in Port Dover and Port Maitland.

In terms of catch, 9.6 million pounds, valued at \$629,190 were caught in the Region in 1961 accounting for 19.5 per cent of total poundage caught in Ontario, and 12.5 per cent of total value of catch. In 1968, 12.8 million pounds valued at \$601,061 were caught in the Region. Despite the considerable increase in size of catch, there was a shift from high to low price species, resulting in a decline in the total value of fish caught. Fishing in 1961 provided an average gross income per man of only \$2,487.

Trends Most of the fishing operations in the Region are quite small although in Norfolk and Haldimand there are 45 boats of over 40 feet. The general decline in the fishing industry has caused considerable economic hardship in centres such as Port Dover, where in 1961, four per cent of the population was employed in fishing and a greater number in related activities. These included four fish processing plants and two boat building companies.

Further research is needed to determine the effect that pollution, particularly thermal pollution, will have on the future of the fishing industry in this lake. There is at present, a considerable demand for Great Lakes fish in the United States, and given improved marketing facilities in Canada, it seems possible that fishing could become a successful small scale local industry, if combined with alternative sources of employment in the winter months.

SECONDARY INDUSTRIES

The secondary sector of the economy is confined for the purposes of this report, to manufacturing alone. The construction and transportation industries will be analysed later, together with the other components of the tertiary sector.

Manufacturing

General Characteristics The importance of manufacturing in the Niagara Region to both the Region and the Province is clearly demonstrated by the fact that in 1966, the Niagara Region contained 12 per cent of the manufacturing establishments in Ontario, and accounted for 17 per cent of the Province's employment in manufacturing. Even without Norfolk, the Region still contained 11 per cent of the manufacturing establishments, and 16 per cent of the employment.

Within the Region, 37 per cent of the labour force was involved in manufacturing, compared with 27 per cent for the Province. Despite this concentration of employment, there are indications that the Region is performing significantly below the Province in the growth of the manufacturing sector. Value of output (shipments) in the Region reached \$3,342 million in 1966, an increase of 61 per cent over 1961, compared with a 68 per cent increase in the Province as a whole. Similarly, total value added

at \$1,620 million increased by 60 per cent over the period, compared with 66 per cent for Ontario.

Trends in the Manufacturing Sector One of the key concepts in an analysis of regional growth is the distinction between the basic and non-basic sectors of the economy. A region grows primarily by increasing its exports to other regions. Those sectors or industries which are export oriented are known as basic, while those which are geared towards intra-regional markets are known as non-basic. The location quotient, as discussed in Chapter III of this report, is a means by which the basic and non-basic sectors may be identified, the basic sectors being those with location quotients greater than unity. The location quotient for manufacturing in the Niagara Region is 1.38. This sector, therefore, is a generator of regional growth due to its strongly basic characteristics.

There have been, however, indications of significant problems between 1951 and the present time. Manufacturing in the Niagara Region experienced a decline, both in absolute and relative terms, during the 1951 to 1961 decade. This trend reversed between 1961 and 1966, perhaps reflecting the general recovery of the economy as a whole. Since 1966, however, there have been signs of another decline. The Region experienced a loss of nearly 14,000 jobs from 1956 to 1960, but gained approximately 30,000 jobs from

1961 to 1966, a net increase over the entire ten year period of 13 per cent.

The geographical distribution of gains and losses within the Region has changed during the 15 years between 1951 and 1966. The labour force data for 1951 and 1961 show increases in manufacturing in the two rural counties of Haldimand and Norfolk as well as in Lincoln, with decreases in Brant, Welland and Wentworth. All counties had an overall increase in the number of employees over the ten-year period 1956 to 1966, the largest gains in absolute terms being in Wentworth and Lincoln. In Welland County there was an overall decline of 1,549 employees from 1956 to 1964. Between 1964 and 1966 there was an increase of 2,571 employees, more than offsetting the previous decline.

Despite the apparent growth in the 1961 to 1966 period, in terms of both employment and establishments, the Niagara Region lost ground relative to the Province. By 1966, the Region accounted for a smaller percentage of the Province's manufacturing employment and establishments than it had in 1961. Even more serious, however, was the Region's rapidly declining share in the number of plant expansions and new manufacturing firms being established in Ontario. In 1961 the Region attracted over 12 per cent of the new establishments that located in the Province that year. By 1964 this share had increased to over 18 per cent, but by 1968 it had dropped to

five per cent, showing that the Region was progressively less able to attract new industries.

When these trends are examined on a county basis in terms of the balance between establishments entering and leaving the Region, considerable intra-regional variations become apparent. While there were slightly more manufacturing establishments entering the Region between 1961 and 1966 than left it, Welland County suffered a serious net loss. Lincoln and Wentworth gained approximately as many establishments as they lost, and therefore had no more establishments at the end of the period than they had at the beginning. The remaining three counties showed a small net gain. It therefore seems that the most industrialized areas of the Region have been those with the greatest problems both in attracting new industries and in retaining those already present. In addition, the eastern parts of the Niagara Peninsula have experienced overall declines in the manufacturing sector. The locational factors contributing to these declines will be examined later in this report.

Growth Industries in the Niagara Region All 20 of the Major Industrial Groups identified by the Dominion Bureau of Statistics are to be found in the Niagara Region. Of these, the basic or export oriented industries are the manufacturers of primary metals, non-metallic minerals, machinery and textiles, as

well as metal fabricating plants and knitting mills. The particularly fast growth industries in Ontario between 1961 and 1966 were the transportation equipment, electrical products, machinery and metal fabricating groups. Two of the Niagara Region's basic industries are amongst the Province's fast growth industries.

The inquiry into the effects of the composition of manufacturing in the Niagara Region indicates that there are conflicting tendencies, but that these seem to neutralize one another in such a way that the Region could possibly experience changes in total manufacturing activity similar to those in the Province in future. To arrive at this conclusion, the 20 Major Industrial Groups in the Region were grouped into four classes as shown on Table 4.2. These were:

- A) Industries growing more rapidly than average in both the Region and the Province.
- B) Industries growing more rapidly than average in the Region and less rapidly than average in the Province.
- C) Industries growing less rapidly than average in the Region and more rapidly than average in the Province.

TABLE 4.2

RELATIVE GROWTH CLASSIFICATION, MANUFACTURING INDUSTRIES, NIAGARA REGION^a, 1961 - 1964

A - Industries growing more rapidly than average in both the Region and the Province

	TOTAL EMPLOYMENT IN REGION			% Of 1964 ^b		Local Quotient
	1961	1964 ^b	% Change	Regional	Provincial	
	No.	No.	1964/1961	Total	Total	
	(1)	(2)	(3)	(4)	(5)	(6)
Transportation Equipment	9,059	13,490	48.9	11.2	11.4	0.98
Machinery Industries	8,920	11,104	24.5	9.3	6.0	1.55
Furniture and Fixtures	470	573	21.9	0.5	2.5	0.20
Electrical Products	<u>7,539</u>	<u>8,828</u>	<u>17.1</u>	<u>7.4</u>	<u>9.7</u>	<u>0.76</u>
	25,988	33,995	30.8	28.4	29.6	0.96

B - Industries growing more rapidly than average in the Region and less rapidly than average in the Province

Wood Industries	617	810	31.3	0.7	2.3	0.30
Primary Metals	<u>23,864</u>	<u>28,079</u>	<u>17.7</u>	<u>23.4</u>	<u>8.4</u>	<u>2.79</u>
	24,481	28,889	18.0	24.1	10.7	2.25

C - Industries growing less rapidly than average in the Region and more rapidly than average in the Province

Metal Fabricating	12,011	13,319	10.9	11.1	9.5	1.17
Non-Metallic Minerals	5,327	5,910	10.9	4.9	3.3	1.48
Textile Industries	4,570	4,953	8.4	4.1	3.6	1.14
Miscellaneous	<u>2,920</u>	<u>2,708</u>	<u>-7.3</u>	<u>2.3</u>	<u>5.2</u>	<u>0.44</u>
	24,828	26,890	8.3	22.4	21.6	1.04

D - Industries growing less rapidly than average in both the Region and the Province

Clothing Industries	1,202	1,322	10.0	1.1	3.3	0.33
Chemicals	4,464	4,816	7.9	4.0	5.1	0.78
Leather Industries	675	719	6.5	0.6	2.0	0.30
Food and Beverages	9,269	9,705	4.7	8.1	11.9	0.68
Paper and Allied Industries	6,146	6,300	2.5	5.3	5.6	0.95
Printing and Publishing	2,362	2,388	1.1	2.0	5.3	0.38
Knitting Mills	<u>2,088</u>	<u>1,932</u>	<u>-7.5</u>	<u>1.6</u>	<u>1.2</u>	<u>1.33</u>
	26,206	27,182	3.7	22.7	34.4	0.66

^aExcludes Norfolk County for which separate data are not available.

^bExcludes rubber industries, for which 1961 data are not available, and industry groups for which data cannot be published.

Sources: Canada, Dominion Bureau of Statistics, Manufacturing Industries of Canada, 1964, (Ottawa: Queen's Printer), Table 6.

Canada, Dominion Bureau of Statistics, Manufacturing Industries of Canada, 1964, Special Tabulation.

D) Industries growing less rapidly than average in both the Region and the Province.

In the Niagara Region, transportation equipment, machinery, furniture and fixtures and electrical products industries have been classified as class A, the fast growth industries between 1961 and 1964. These industries have enjoyed significant economies by locating in the Region. This most desirable class in 1964 comprised 28.4 per cent of all manufacturing employment in the Region with a location quotient of 0.96. The transportation equipment and machinery industries were the most important in this class, and both have proven themselves to be among Ontario's growth industries in the period 1961 to 1966.

The chief occupant of class B was the primary metals industry, with 23.4 per cent of all manufacturing employment and a location quotient of 2.79, showing its strongly basic orientation. The rapid growth of this industry in Niagara and its less than average growth in Ontario suggest that the Region is offering the industry considerable locational advantages.

On the unfavourable side, some very large industries - metal fabricating, non-metallic minerals and textiles - fall into class C. These industries show above average growth in Ontario but

are performing badly in the Niagara Region. They comprise 22.4 per cent of employment and have a combined location quotient of 1.04. Thus, in those industries upon which the Region has traditionally depended, a net shift out of the Region has been occurring.

Finally, slow growth industries in both the Region and the Province (class D) comprise nearly a quarter of the total employment, but have a location quotient of only 0.66. Food and beverages, paper and allied industries and chemicals fall into this category.

It is, therefore, apparent that not only does the Niagara Region have almost half its employment in those industry groups which are growing slowly in the Region, but four of the Region's basic industries fall into the slow growth categories. Only one of the Region's basic industries, machinery, is a fast growth industry in both the Region and the Province.

Four sub-regions may be distinguished based upon aggregate performance, locational factors and industrial structure. These are (a) Wentworth County, an area of moderately high performance, (b) Lincoln and Welland counties which are areas of moderately high and intermediate performance respectively, (c) Brant County, an area of intermediate performance and (d) Haldimand and Norfolk, which are areas of moderately low performance.

For each of these sub-areas, the broad findings of the Regional Development Branch's Survey of Manufacturing will be discussed. Attention will be paid particularly to the sub-region's industrial structure, its locational advantages and disadvantages, the characteristics of its labour force and its linkages with other parts of Ontario and North America. A detailed analysis of the inter-industry mix in each of the Region's urban centres is to be found in Chapter VII.

The basis for this analysis is the 20 major industrial groups classified by the Dominion Bureau of Statistics. However, because of the disclosure rule, it has often been necessary to combine these major industrial groups into broader categories.

Wentworth County This sub-region is one of moderately high performance compared with the Provincial norm. It contains the City of Hamilton and the towns of Burlington, Dundas and Stoney Creek. These four urban centres have close links with one another, and may be considered as one city-region, although Burlington does have many functional ties with Halton County.

1. Industrial Structure The industrial structure of this area is exceedingly complex. In 1968, there were 676 manufacturing establishments employing a total of 62,000 people, making this the major manufacturing area in the Niagara Region, and second only to

TABLE 4.3

BASIC INDUSTRIES, WENTWORTH COUNTY, 1968
(1)

Industry Group	Establishments		Employment	% Of Sub-Regional Employment	Location Quotient
	No. (1)	No. (2)	(3)		
Rubber	4	n. a.	n. a.	n. a.	n. a.
Clothing	15	1,205	1.8	1.38	1.38
Furniture and Fixtures	42	393	0.6	1.20	1.20
Primary Metal	24	22,944	33.6	1.34	1.34
Electrical Products	18	9,040	13.2	3.30	3.30

(1) Includes all of Burlington.
n.a. Not available due to disclosure rule.

Source: Ontario Statistical Centre, Special Tabulation, 1968.

Metropolitan Toronto in Ontario. The main basic, or export oriented industries are shown on Table 4.3. The location quotient as used in this chapter is calculated using the Niagara Region as a base, and is, therefore, an index of specialization.

Wentworth County has a very sound inter-industry mix, with 29 per cent of its employment in Ontario's fast growth industries, electrical products and metal fabricating in particular. The primary metals group is the most important in this area because of its high level of employment and its regional growth potential.

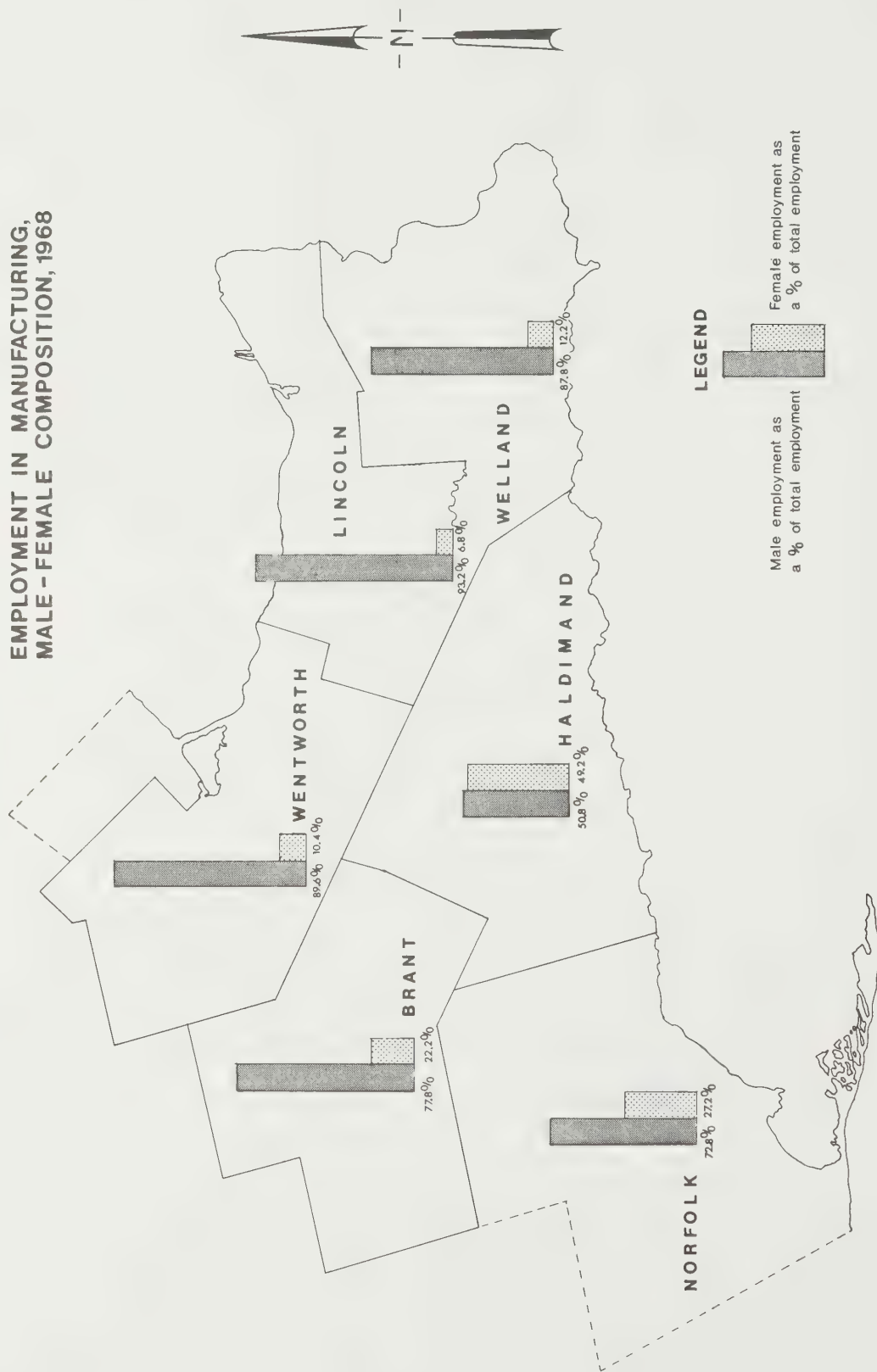
2. Labour Supply In Wentworth County, 42 per cent of the male employment is in the semi-skilled and 21 per cent in the skilled categories. (See Figures 9 and 10). The clerical and administrative categories comprise 24 per cent of male employment. These figures reflect the preponderance of industries such as the primary metals, metal fabricating and machinery that need highly skilled workers. Many of these industries train their own labour force.

Over 65 per cent of female employment is in the clerical and administrative categories, reflecting concentration of services in the Hamilton area, and the limited female employment opportunities in heavy industries.

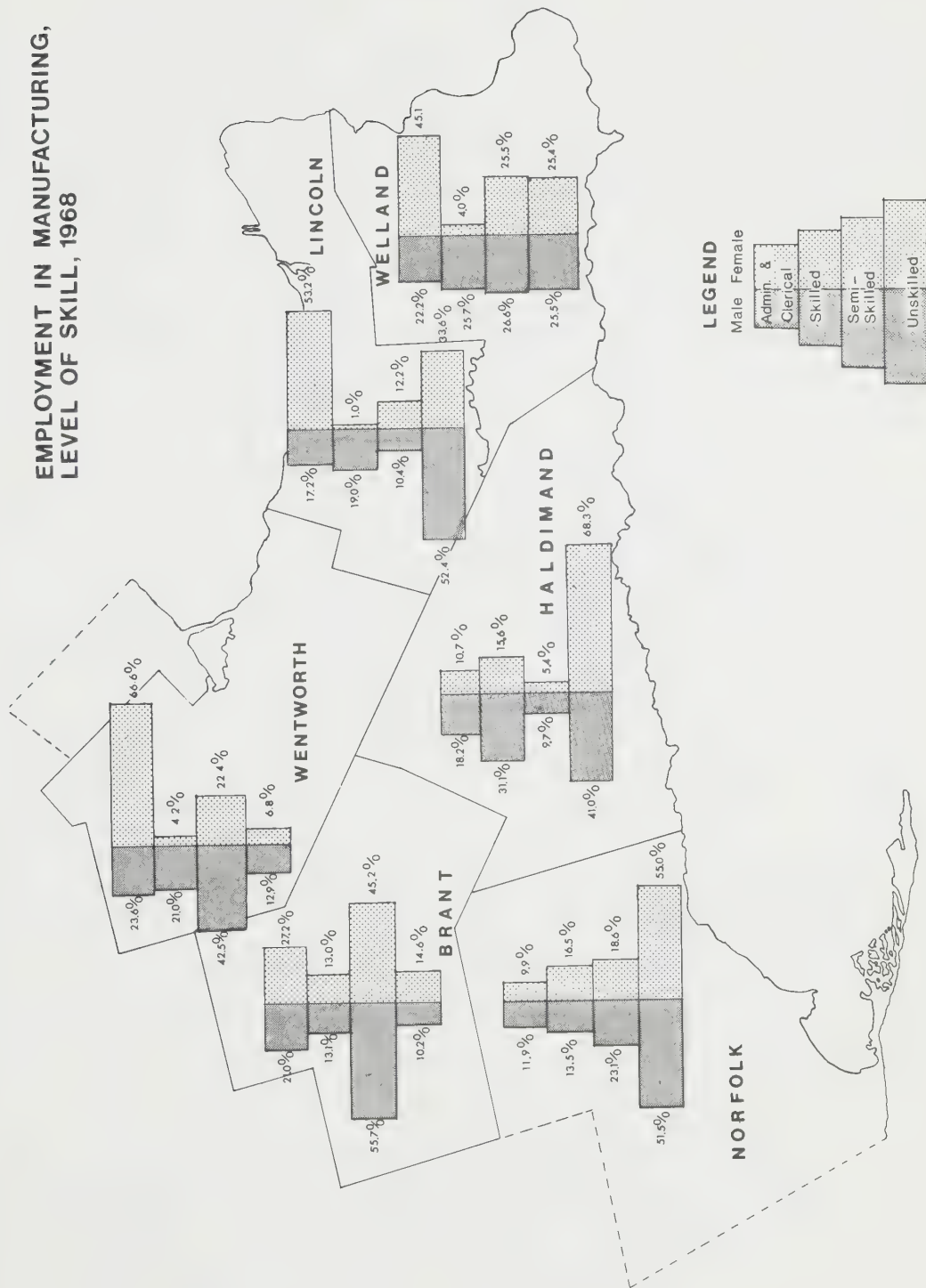
Within Wentworth County, there are shortages in certain skilled trades, especially machinists, welders, electricians and metal fabricators. The textile industry is one of the most

NIAGARA (SOUTH ONTARIO) DEVELOPMENT REGION

EMPLOYMENT IN MANUFACTURING, MALE-FEMALE COMPOSITION, 1968



EMPLOYMENT IN MANUFACTURING,
LEVEL OF SKILL, 1968

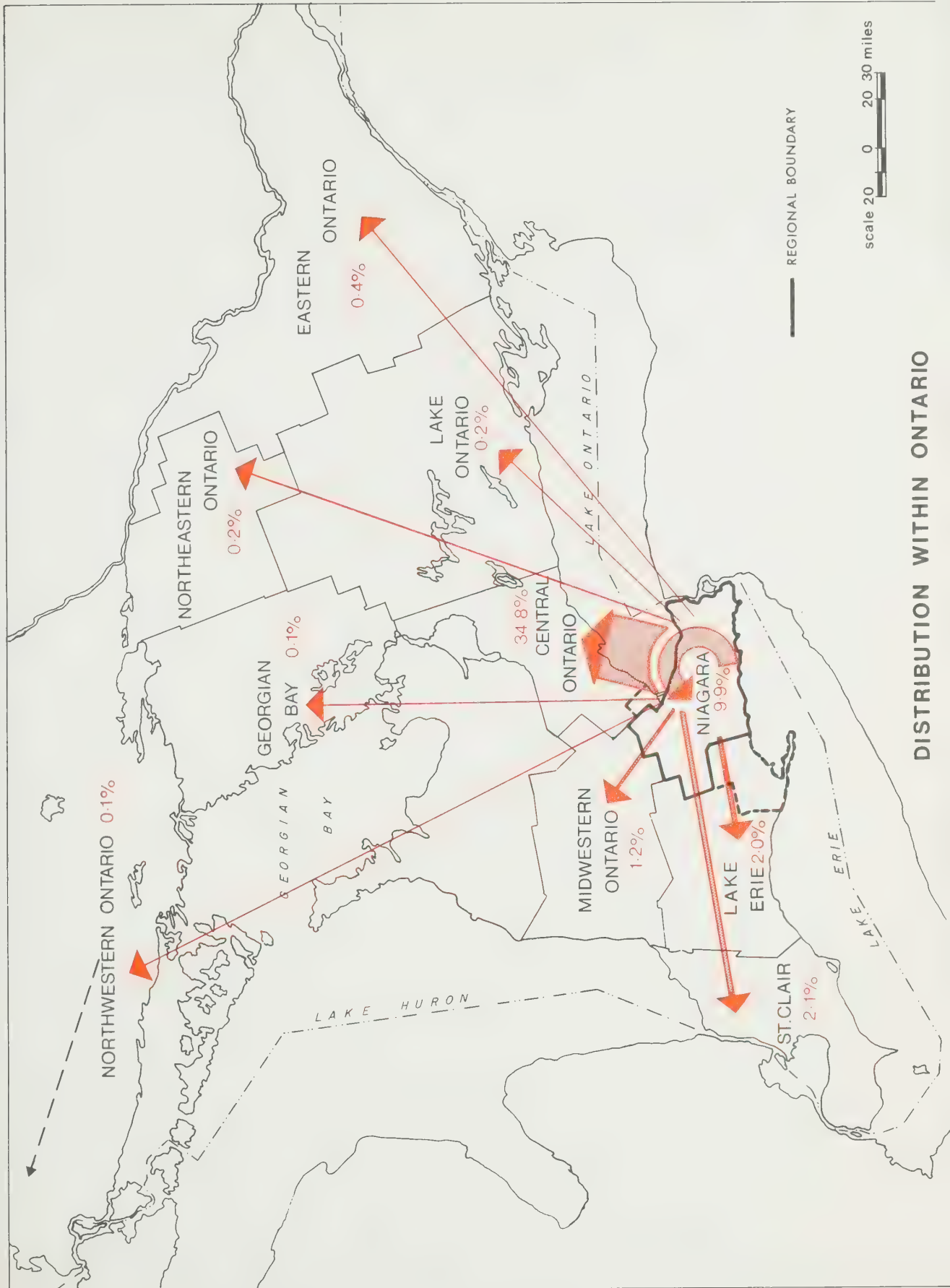


prominent examples of a low-wage industry in this area that has found great difficulty in competing for labour with high wage manufacturers. As a result, there has been a steady decline in the area's traditional textiles, clothing and knitting industries in the past 25 years. Industries in Dundas find it particularly difficult to get skilled labour due to the proximity of Hamilton and Burlington. Seasonality of labour is not generally a problem, although it may occur in specific industries such as transportation equipment which are very responsive to external demand.

3. Relationship to major Markets The majority of companies interviewed found their relationship to markets very favourable, since they have easy access not only to markets in the Hamilton area, but also in Toronto, Kitchener-Waterloo and London. Transport facilities, particularly roads and railways, are good. Companies dependent upon bulky inputs, such as the primary metals industries, steel companies in particular, originally located in the Hamilton area because of the facilities available at Hamilton harbour. These industries indicated that they are still very satisfied with their locations in this respect. Companies in Dundas, however, felt that they were less favourably located with regard to accessibility and transportation facilities.

Industries located in Wentworth County sell only 21 per cent of their products within the Niagara Region. Of the products

SPATIAL FLOWS OF MANUFACTURING OUTPUT (BY PER CENT OF TOTAL VALUE 1968)



DISTRIBUTION WITHIN ONTARIO

sold elsewhere, 28 per cent are sold outside Ontario, of which 15 per cent go to the rest of Canada, and 6.5 per cent approximately to each of the United States and foreign markets. Within Ontario, most companies were unable to identify the precise destinations for their products. The food and beverage industry sells 60 per cent of its output, and the rubber and chemicals group 34 per cent, to the Toronto area. Other companies stated that their product distribution was approximately similar to the population distribution in Ontario. The linkages with Northern Ontario are virtually non-existent. The destinations for outputs from the Niagara Region as a whole are shown on Figure 11.

4. Other Locational Factors Public utilities in Hamilton were generally considered to be favourable to industry. The major disadvantages were the shortage of land for industrial expansion and the cost of housing. Industries in Burlington are much better off in all these respects. Dundas also finds a shortage of land for expansion, but public utilities are generally very favourable.

5. Summary Of the companies interviewed an overwhelming majority said either that they were satisfied with their present location or would relocate within 100 miles. The remainder gave various reasons for relocating elsewhere. Some types of machinery

industries would prefer to be nearer the United States. The constraint of limited land for expansion has influenced the steel companies in selecting sites along the north shore of Lake Erie at Nanticoke and Port Burwell for future expansion.

Lincoln and Welland Counties (Regional Municipality of Niagara) These two counties have been considered as one sub-region because they are now a single municipality. It is apparent that manufacturers consider this area to have similar locational characteristics throughout.

1. Industrial Structure In 1968 in this area there were 483 companies employing a total of 42,000 people. The basic industries are shown on Table 4.4.

Of these industries, only the transportation equipment group, concentrated mainly in St. Catharines, is among both the Province's and the Region's fast growth industries. The non-metallic minerals have shown a pattern of fast growth in Ontario, but less than average growth in the Niagara Region. The food and beverages, paper and allied, and chemicals industries have been slow growth industries to both the Region and the Province. Thus the inter-industry mix in the Regional Municipality of Niagara is working against the area's continued economic growth.

TABLE 4.4

BASIC INDUSTRIES, LINCOLN AND WELLAND COUNTIES, 1968

<u>Industry Group</u>	<u>Establishments</u>		<u>% Of Sub-Regional</u>		<u>Location</u>
	<u>No.</u>	<u>Employment</u>	<u>Employment</u>	<u>Quotient</u>	
	(1)	(2)	(3)	(4)	
Food and Beverage	97	3,605	8.6	1.06	
Paper and Allied	12	3,410	8.2	1.67	
Transportation Equipment	22	11,435	27.4	2.36	
Non-Metallic Minerals	38	2,348	5.6	1.12	
Chemical and Chemical Products	25	1,895	4.5	1.02	

Source: Ontario Statistical Centre, Special Tabulation, 1968.

2. Labour Supply The male labour force is distributed very evenly through the four categories of skilled, semi-skilled, unskilled and administrative, with approximately 25 per cent in each. Half the female employees are in the semi-skilled and unskilled groups; less than five per cent are skilled; and over 45 per cent are in the administrative and clerical groups. (See Figure 10).

The labour market in Lincoln County is dominated by high-wage, unionized industries, which are attracting the best workers in the area. However, even these industries experience a considerable shortage of skilled tradesmen, particularly maintenance machinists, welders, electricians, millwrights and tool and die makers. These shortages are particularly severe in Niagara Falls, Grimsby and Fort Erie. Firms located in St. Catharines and Thorold find that skilled labour is readily available. All firms in Lincoln and Welland counties find it easy to obtain unskilled workers.

Welland County is affected very little by seasonal demands for labour, due to the concentrations of employment in the chemicals, non-metallic minerals and paper industries, which have stable employment patterns. Lincoln County, however, experiences the greatest seasonal variations of any county in the Niagara Region, due to the large numbers of people employed in the transportation equipment industry which is subject to considerable

fluctuation in demand and production. February and July were, in 1968, the months with the lowest numbers of workers employed in both the transportation equipment industry as a whole, and in Lincoln County.

3. Relationship to Major Markets This constitutes one of the major problems in this area. Many firms have located here in the past because of cheaper electricity rates. With the growth of markets in the Toronto area and the equalization of hydro rates, however, firms in the eastern part of the Region now find themselves at a less competitive advantage. This applies particularly to firms in Niagara Falls, Port Colborne and Fort Erie. At a particular disadvantage are the primary metals, metal fabricating machinery, chemicals and non-metallic minerals industrial groups. Almost all find total transportation costs unfavourable because of their distance from major markets.

A substantial proportion of the outputs from the industries in Lincoln and Welland counties is sold to markets outside Ontario - 19 per cent goes to markets in the rest of Canada, 16 per cent goes to the United States, and 15 per cent to markets outside North America. Within Ontario, approximately five per cent is sold within the Niagara Region; the remainder is distributed throughout the Province, particularly to the Toronto area.

Three industry groups sell a substantial proportion of their output to markets within the Niagara Region - food and beverages, 32 per cent, and rubber and chemicals combined, 20 per cent. Almost all industry groups have major linkages with the Toronto area. The industries that sell large proportions of their output to the United States are the non-metallic minerals, 34 per cent, electrical products, 20 per cent, wood and paper groups 18 per cent, and the leather, textile and knitting industries, 23 per cent.

4. Other Locational Factors Water and sewage facilities are satisfactory, although some industries such as pulp and paper are finding pollution control a problem. Housing is generally good throughout this area. All firms interviewed considered proximity to manufactured inputs to be good, although the proximity to natural resources was in most cases unsatisfactory. Also, some firms experience a shortage of land for expansion.

5. Summary While many firms in Lincoln and Welland would locate here again if they had the option, a sizeable majority of firms wanting to move out of the area would relocate nearer their markets in Toronto. Some firms said that they would leave southwestern Ontario entirely, which therefore suggests a need for improving the

transport linkages with the Hamilton and Toronto areas and attracting the kinds of industries to the area that can best profit from its locational advantages.

Brant County This county has been an area of moderate performance, but with locational potential for future growth. The urban centres of Brantford and Paris are located within easy reach of major markets in Southern Ontario.

1. Industrial Structure In this county in 1968, there were 244 manufacturing establishments with a total employment of 15,105 people. Table 4.5 shows those industry groups that are basic, or export oriented.

Machinery and electrical products are classified as fast growth industries in Ontario while paper, chemicals, printing, clothing and knitting mills are all slow growth industries in both the Region and the Province. The industrial composition in Brant therefore seems to be unfavourable to the economic prosperity of the area.

2. Labour Supply Brant County has over half its male labour force in the semi-skilled category, 56 per cent. Relatively low proportions are unskilled, 10 per cent, or skilled, 13 per cent. Administrative and clerical workers account for a further 21 per

TABLE 4.5

BASIC INDUSTRIES, BRANT COUNTY, 1968

<u>Industry Group</u>	<u>Establishments</u>		<u>Employment</u>		<u>% Of Sub-Regional</u>		<u>Location</u>	
	<u>No.</u>	<u>(1)</u>	<u>No.</u>	<u>(2)</u>	<u>Employment</u>	<u>(3)</u>	<u>Quotient</u>	<u>(4)</u>
Textiles, Knitting Mills and Clothing	15		2,494		16.5		2.50	
Wood, Furniture, Paper and Allied, Printing, Publishing and Allied	53		1,442		9.5		1.16	
Machinery	21		4,449		29.4		3.13	
Chemical and Chemical Products	14		860		5.7		1.30	

Source: Ontario Statistical Centre, Special Tabulation, 1968.

cent. In the female labour force, 45 per cent are semi-skilled, 15 per cent are unskilled, and 13 per cent are skilled. Administrative and clerical workers account for 27 per cent. These figures no doubt reflect the high demand for male semi-skilled workers in the large machinery and electrical products industries, and for unskilled and semi-skilled female workers in the textile, knitting and clothing industries and some branches of the electrical equipment industries.

Many manufacturing companies in Brant County are faced with an acute labour shortage, particularly in the skilled and semi-skilled categories. A situation has developed in which high paying companies such as the farm machinery and electrical products manufacturers monopolize the labour market. The unemployment benefits paid by some of the companies exceed the wages paid by non-unionized firms, so that there is no incentive for people to work in lower wage industries. The traditional industries in Brantford and Paris, textiles, knitting mills and clothing manufacturers are among the most seriously affected. In addition, there is a general shortage of skilled machine operators of various kinds, welders, electricians and tool and die makers. Seasonality of labour is not a characteristic of the labour market in Brant, with the exception of the food processing companies which find it difficult to obtain workers during the summer and early fall.

3. Relationship to Major Markets Road and rail services were satisfactory to almost all companies interviewed; air and water transportation were considered unsatisfactory, in particular the distance from Hamilton harbour.

Brant County is well located for firms that require a large proportion of their manufactured inputs from the Hamilton area.

The industries in Brant County sell less than three per cent of their products within the Niagara Region. A total of 68 per cent of outputs leaves Ontario entirely - 43 per cent goes to the United States, 22 per cent to the rest of Canada, and three per cent to markets outside North America. The primary metals, metal fabricating and machinery groups have the strongest links with the United States. Only 24 per cent of the outputs from the industries in Brant County is sold to other regions of Ontario, in particular the Toronto and Kitchener-Waterloo areas.

Companies located in Brant indicated that transportation costs and proximity to major markets are favourable. This is particularly true of companies exporting a large proportion of their products to the United States, especially the primary metals, metal fabricating and machinery groups.

4. Other Locational Factors Housing and public utilities are satisfactory in Brantford. In Paris, however, the companies interviewed felt that there was a shortage of all types of housing, and that water and sewage facilities could be improved.

5. Summary Of the firms interviewed, 67 per cent would locate in Brant County again, particularly the high wage industries of the primary metals, metal fabricating, machinery and electrical products groups. Firms that would relocate within a hundred-mile radius made up 22 per cent of the total. Food processing firms would like to locate near Brantford or Paris, but sufficiently far away to avoid competing with high wage industries. Other firms expressed a wish to be nearer to markets in the Toronto area. Brant County is an excellent location for growth industries in the high wage category and this type of industry presently located there has very good future prospects.

Haldimand and Norfolk Counties These two counties form a distinctive sub-region within the Niagara Region, due to their moderately low performance in the past. Because the area is not located within the main axes of growth in the Region, the Burlington-Hamilton-St. Catharines Corridor and the St. Catharines-Port Colborne-Niagara Falls triangle, it has been an area of moderately low performance, as was indicated in Chapter III of this report.

1. Industrial Structure In the two counties in 1968, there were 112 manufacturing establishments with a combined employment of 5,394 people. The industries that are basic, or export oriented, are shown on Table 4.6.

Of these basic industries, only electrical products and metal fabricating are among the fast growth industries in Ontario. Regional fast growth industries located in this area are textiles, metal fabricating, electrical products and non-metallic minerals.

2. Labour Supply Both Haldimand and Norfolk counties have very high proportions of unskilled workers in their labour force. Of the male workers in Haldimand, 41 per cent were unskilled, 10 per cent semi-skilled and 31 per cent skilled. In Norfolk, 51 per cent of all male workers were unskilled, 23 per cent semi-skilled, and 14 per cent skilled. Finally, 18 per cent of the male workers in Haldimand and 12 per cent in Norfolk were in the clerical and administrative categories. This is a reflection both of the industry mix in the area, with its high proportion of industries requiring only low levels of skills, such as food and beverages, and of the out-migration of well qualified people in response to better job opportunities elsewhere. Most of the female employment is in unskilled occupations, and there seems to be a great shortage of clerical and administrative jobs for women, reflecting the poor development of the tertiary sector.

TABLE 4.6

BASIC INDUSTRIES, HALDIMAND AND NORFOLK COUNTIES, 1968

<u>Industry Group</u>	<u>Establishments</u>		<u>Employment</u>		<u>% Of Sub-Regional Employment</u>		<u>Location Quotient</u>	
	<u>No. (1)</u>		<u>No. (2)</u>		<u>(3)</u>		<u>(4)</u>	
Food and Beverage	31		723		13.4		1.65	
Tobacco	3		694		12.9		21.50	
Leather, Knitting and Textiles	8		732		13.5		2.21	
Wood	4		n.a.		n.a.		n.a.	
Metal Fabricating	17		793		14.7		1.29	
Electrical Products	2		n.a.		n.a.		n.a.	
Non-Metallic Mineral Products	7		478		8.9		1.78	
Chemical and Chemical Products	8		391		7.3		1.66	

n.a. Not available due to disclosure rule.

Source: Ontario Statistical Centre, Special Tabulation, 1968.

Skilled trades for which there are particular shortages in this area include stationary engineers, machinists, electricians, weavers and loom fixers. Most firms interviewed, with the exception of the high paying industries such as transportation equipment manufacturers, indicated that they find it difficult to attract good quality skilled labour. The higher paying industries find the supply of unskilled labour in the area satisfactory, but the low wage industries such as food and beverages and clothing encounter considerable problems.

Both Haldimand and Norfolk counties experience considerable seasonal fluctuations in volumes of employment, with peaks in March, September and November. This pattern is due to the concentration of employment in the food and beverage and tobacco industries, which together account for over 25 per cent of manufacturing employment in Haldimand and Norfolk. The non-metallic mineral group is also subject to seasonal variations. The most stable industries in the area are the electrical products, metal fabricating and chemicals. Together these account for one-third of all manufacturing employment. Establishments that need large volumes of seasonal labour find great difficulty in obtaining workers.

3. Relationship to Major Markets Transportation facilities, particularly roads and railways, are generally considered to be good by the companies interviewed; air transport was considered to be

unsatisfactory although few establishments use it. However, most companies find total costs of transportation unfavourable to some extent, particularly those in Haldimand. Distances from major markets is considered to be a problem since the largest market outside the Niagara Region is the Toronto area.

Of the total outputs from the industries in this area, approximately 29 per cent goes to the Toronto area, particularly the products from the following industrial groups: chemicals, 34 per cent, metal fabricating, 67 per cent, leather, knitting and textiles, 17 per cent, and food and beverages, 10 per cent. Approximately five per cent of the outputs of all industries by value is sold within the Niagara Region itself, consisting largely of outputs from the food and beverages industries, 10 per cent, and the metal fabricating industries, 10 per cent. A small proportion of the total value of output goes to the Lake Erie, Mid-western Ontario, and St. Clair Economic Regions.

Linkages with areas outside Ontario are not as yet well developed, since only 15 per cent of outputs go to markets outside Ontario, six per cent to the United States, six per cent to the rest of Canada, and three per cent out of North America. However, this situation will change with the establishment of an industrial complex in the Nanticoke area.

4. Other Locational Factors Proximity to sources of manufactured inputs and raw materials is a key locational factor. Firms dependent upon local raw materials, such as the tobacco and food processing industries, find their locations very favourable, but companies dependent upon inputs that are not locally available find themselves at a competitive disadvantage. This is particularly true of the electrical products and chemical industries.

Public utilities are generally satisfactory although firms located in Dunnville and Port Dover felt that sewage disposal could be improved. Firms in Simcoe have found a shortage of serviced land for plant expansions, and there has also been a housing shortage in this area.

5. Summary Of manufacturing establishments interviewed, 66 per cent stated that they would locate in this area again if they had the option, while 26 per cent would locate within 100 mile radius. The main reason given for leaving Haldimand and Norfolk counties was to be near major markets.

Based upon past performance, the most viable industries in this area fall into two categories. The first consists of the food and beverages, tobacco, and leather, textiles and knitting industrial groups. These find the cheap labour and, in several

cases, the proximity to inputs, to be particularly advantageous. The second category consists of the metal fabricating and transportation equipment industries. The area also has great locational advantages for the primary metals industries which will be capitalized upon by the Steel Company of Canada at Nanticoke. Among these advantages are the availability of land for expansion, avoidance of tolls on the Welland Canal and proximity to markets in Southern Ontario and the United States. This in turn will stimulate related manufacturing industries already in the area.

TERTIARY INDUSTRIES

These industries are concerned not with obtaining raw materials or processing raw or partly manufactured materials, but with providing essential services for industry and for the general population. They include such industries as wholesale and retail trade, finance, community business and personal services, and public administration.

The level of development of the tertiary sector in general is a direct reflection of the prosperity of the primary and secondary sectors of a region's economy. For example, growth in manufacturing activity has a multiplier effect upon the tertiary or service industries, causing an increase in the number of establishments and in the volume of employment. Similarly, a decline in primary or secondary industries will result in a decline in the tertiary or service industries. As a region becomes more highly urbanized and industrialized, the proportion of people employed in the tertiary sector increases, and the labour force in primary industry and manufacturing declines as a proportion of the regional total.

The tertiary sector in the Niagara Region is well developed. For the purpose of this chapter, construction will be discussed as part of the tertiary sector.

Construction

The level of construction activity is a sensitive measure of a region's general economy and its performance through time. It is also an important indicator of rising standards of living, reflecting investment in the spheres of housing, industry, commerce, institutions and government establishments. Since it represents long term investment, it also demonstrates the degree of confidence in a region's economic potential.

In 1961, 6.5 per cent of the Region's labour force was employed in the construction industry, the same proportion as in the Province. When the regional figures are disaggregated by county, the location quotients indicate that the construction industry is more concentrated in Lincoln and Wentworth, reflecting the rapid growth in the urbanization of these counties. However, between 1951 and 1961 construction activity became more evenly distributed throughout the Region as a whole.

The value of building permits issued for the Niagara Region in 1966 was approximately \$177 million, slightly less than double the value in 1961. (See Table 4.7) During the same period, the value of building permits for the Province increased by only 79 per cent. In 1961, the Region accounted for 9.3 per cent of the total value of permits issued in the Province. The Region increased its share each year up to 1966 when there was slight

TABLE 4.7

VALUE OF BUILDING PERMITS ISSUED, NIAGARA REGION AND PROVINCE OF ONTARIO,
1961 TO 1966

<u>Year</u>	<u>Value Of Building Permits (\$000's)</u>		<u>Region As A % Of The Province</u>
	<u>Province Of Ontario</u>	<u>Niagara Region</u>	
1961	988,294	91,831	9.3
1962	1,065,725	105,017	9.9
1963	1,207,278	121,151	10.0
1964	1,434,053	158,489	11.1
1965	1,656,716	193,578	11.7
1966	1,768,910	177,056	10.0

Source: Canada, Dominion Bureau of Statistics, Special Tabulation, 1968.

fall off, but it still accounted for 10 per cent of the total. Thus, the rate of growth in the value of building permits issued was faster for the Region than for the Province.

Because the construction industry is subject to the performance of the economy as a whole, the values of building permits issued were aggregated for the years 1957 to 1966 inclusive to avoid the short-term cyclical fluctuations of this activity, and were then disaggregated by sectors and by counties. (Tables 4.8 and 4.9).

This further disaggregation at the sectoral level shows that residential construction accounted for almost half of the total value of building permits issued for the Region during this ten year period. Construction of institutions and government buildings accounted for one-fifth, and the balance was split equally between the industrial and commercial sectors.

Table 4.9 shows that 66.6 per cent of the total value of permits in the Niagara Region was accounted for by Wentworth and Lincoln which have 60.6 per cent of the total population. Welland, which has 20.1 per cent of the population, accounted for 19.5 per cent of the building permits issued. The more rural counties of Haldimand and Norfolk, which have nine per cent of the total population, accounted for less than five per cent of the total value of permits issued.

TABLE 4.8

VALUE OF BUILDING PERMITS ISSUED BY COUNTIES, NIAGARA REGION, AGGREGATED FOR THE YEARS 1957 TO 1966

	VALUE OF BUILDING PERMITS ISSUED					
	Residential \$000's (1)	Industrial \$000's (2)	Commercial \$000's (3)	Institutional And		Total \$000's (6)
				Government \$000's (4)	Other \$000's (5)	
BRANT	No. 50,579 %	25,801 22.0	16,800 14.4	23,813 20.4	37 *	117,030 100.0
HALDIMAND	No. 10,176 %	2,677 15.8	1,666 9.8	2,471 14.5	1 *	16,991 100.0
LINCOLN	No. 131,645 %	28,630 11.6	39,209 15.8	48,333 19.5	86 *	247,903 100.0
WELLAND	No. 115,177 %	34,439 13.7	53,713 21.3	48,403 19.2	34 *	251,766 100.0
WENTWORTH ⁽¹⁾	No. 283,614 %	100,833 16.5	85,284 14.0	140,432 23.0	222 *	610,385 100.0
NORFOLK	No. 20,302 %	6,872 15.4	5,744 12.8	11,808 26.4	2 *	44,728 100.0
TOTAL, NIAGARA REGION INCLUDING NORFOLK	No. 611,493 %	199,252 15.5	202,416 15.7	275,260 21.4	382 *	1,288,803 100.0

(1) Does not include that part of Burlington that is in Halton County.

* Less than 0.05 per cent.

Source: Canada, Dominion Bureau of Statistics, Special Tabulation, 1968.

PER CENT DISTRIBUTION OF VALUE OF BUILDING PERMITS ISSUED BY SECTORS, COUNTIES, NIAGARA REGION, AGGREGATED
FOR THE YEARS 1957 TO 1966

	VALUE OF BUILDING PERMITS ISSUED					1966 POPULATION %
	Institutional And					
	Residential %	Industrial %	Commercial %	Government %	Total %	
	(1)	(2)	(3)	(4)	(5)	(6)
BRANT	8.3	13.0	8.3	8.6	9.1	10.2
HALDIMAND	1.7	1.3	0.8	0.9	1.3	3.4
LINCOLN	21.5	14.4	19.4	17.6	19.2	16.4
WELLAND	18.8	17.3	26.5	17.6	19.5	20.0
WENTWORTH ⁽¹⁾	46.4	50.6	42.1	51.0	47.4	44.3
NORFOLK	3.3	3.4	2.9	4.3	3.5	5.7
TOTAL, NIAGARA REGION INCLUDING NORFOLK	100.0	100.0	100.0	100.0	100.0	100.0

(1) Does not include that part of Burlington that is in Halton County.

Source: Canada, Dominion Bureau of Statistics, Special Tabulation, 1968.

When the total value of building permits is examined by sectors and by counties, it may be seen that Lincoln and Wentworth have a disproportionately high share of the residential sector in relation to their population. In the industrial sector, Brant and Wentworth fare best, and in the commercial sector Lincoln and Welland display higher values relative to their populations. Over half the value of all building permits issued for institutions and governments was accounted for by Wentworth. Haldimand and Norfolk have a consistently lower share of the value of permits issued in all sectors.

Table 4.8 shows the intra-county breakdown of the total value of building permits by sectors. The value of building permits issued in the non-residential sector is indicative of the development prospects for each county. In the industrial sector, Brant, Wentworth and Haldimand accounted for slightly higher proportions than the regional average; in the commercial sector, Welland is considerably above the regional average. Norfolk, which has a disproportionately lower share of the total value of permits, exceeds the regional average in the value of permits issued to institutions and governments. Sixty and 53 per cent of the value of permits issued in Haldimand and Lincoln, respectively, are accounted for by the residential sector.

In conclusion, the Niagara Region has experienced a faster rate of growth in the value of building permits issued between 1961 and 1966 than the Province. The construction industry is largely concentrated in the county of Wentworth, and to a lesser extent in Welland and Lincoln. This reflects the similar concentration in the distribution of economic activity generally, and the value of building permits issued more specifically. The development occurring in these counties is intensifying the existing land use conflicts between increasing urbanization and the preservation of good agricultural land and amenity areas, particularly in the Hamilton-Burlington-St. Catharines corridor and the St. Catharines-Port Colborne-Niagara Falls triangle. The disproportionately lower share of construction activity in the southwestern counties is further evidence of their low performance in the past. However, the value of non-residential building permits issued in Haldimand and Norfolk counties may be expected to show a dramatic increase as a result of the industrial developments associated with the Nanticoke area.

Retail and Wholesale Trade

Retail and wholesale trade are a necessary supplement to the primary and secondary activities discussed earlier. It is within this sector that producers meet consumers through both retail and wholesale outlets. In contrast to the agricultural and manufacturing activities which tend to be basic or export oriented in the Niagara Region, the tertiary sector tends to be oriented to the internal needs of the regional population. The wholesale sector performs the function of collecting goods from manufacturers and distributing these goods to retailers. This therefore results in the concentration of wholesale activities within major urban centres. In contrast, the retail sector tends to be more dispersed, with retail establishments spread across the Region to serve the needs of the people. In the Niagara Region it will be shown that major urban centres dominate both in wholesale and retail trade. Wholesale activities are confined to the major urban centres which have large trade areas; retail activities are also found in major urban centres but these tend to be more specialized than those found in the many dispersed smaller urban centres.

1. Retail Trade The retail trade of the Niagara Region increased from \$488 million in 1951 to \$767 million in 1961. During the period 1951 to 1961, and also during the 1951

to 1966 period, the regional rate of growth tended to be below the provincial average. However, between 1961 and 1966 the Niagara Region experienced a growth of 42 per cent in retail trade sales, as compared with 39 per cent for the Province.

In 1951, the six largest urban centres in the Region accounted for approximately 75 per cent of total retail sales. By 1966, they accounted for 80 per cent. These major centres, Hamilton, St. Catharines, Brantford, Niagara Falls, Burlington and Welland are the dominant retail centres, in order of importance.

Other communities such as Port Colborne, Dundas, Paris and Thorold are of lesser importance in retail trade. Further discussion in the context of the regional hierarchy of urban centres will reveal the effects of the dominant, accessible urban centres on these places.

During the 1961 to 1966 period, both in the Province and in the Niagara Region, there was a general decline in the number of retail establishments, reflecting a trend towards fewer and larger stores. Data for the period 1951 to 1961 revealed that the number of employees in retail trade increased at a slower rate than in the Province.

Two periods of slow growth in the secondary sector

between 1951 to 1961 and between 1951 to 1966, are reflected in the data for retail sales in the Niagara Region. However, after 1961, trends in both the manufacturing and the trade sectors were more optimistic.

2. Wholesale Trade The wholesale trade of the Niagara Region increased from \$423.6 million to \$564.0 million during the 1951 to 1961 period. All counties experienced an increase in sales, although they were generally below the provincial average of 32 per cent. On a county basis, only Brant and Norfolk experienced a change greater than the Province. This is primarily the result of changes in classification from retail to wholesale during that period, for Norfolk County.

Fort Erie, Welland and St. Catharines experienced major increases in wholesale trade between 1951 and 1961. The anomaly within this area is Thorold which showed a very sharp decline in wholesale trade over the same period. This might be the result of the increasing importance of centres such as St. Catharines and Niagara Falls. Fort Erie appears to have experienced the most rapid increase in wholesale trade over the period 1951 to 1961.

During the decade 1951 to 1961 the Niagara Region experienced a general decline in per capita sales. Only Brant

and Norfolk counties showed any increases.

In terms of number of wholesale trade locations, all counties except Brant showed positive increases. Similar upward trends in the number of employees were apparent both in the Niagara Region and in the Province of Ontario.

In 1961, six major urban centres accounted for 76 per cent of the wholesale sales in the Niagara Region. These centres are the same ones that dominated in retail trade, and this may be explained by the fact that the large centres act both as collecting and distributing centres for the Region. In this context, it should be noted that Simcoe ranks as an important centre both for wholesale and retail sales. Its importance may be explained by the fact that it serves the counties of the southwest which tend to have poor access to any of the six major centres.

Evaluation of the Economic Base and Implications for Economic Development

The three most important aspects of the economy of the Niagara Region in the context of economic development are agriculture, manufacturing and tertiary activities. The first two have been discussed as generators of regional income, while the third is essentially dependent upon the levels of performance of the first two.

In agriculture, the fruit and tobacco producers are facing problems created by the combination of urban sprawl and market pressures. The major problems in these specialized areas are (i) to select those areas where continued production is economically feasible, in spite of conflicts of land use; (ii) to phase marginal areas out of production; (iii) to provide suitable employment alternatives to displaced workers.

The quality of the soils, the suitability of the climate and the accessibility to major urban centres of Southern Ontario enhance the potential for both specialized and mixed farming in the Niagara Region.

The mining of structural materials and of fuels in the Niagara Region has created the problems of (a) controlling the locations and extent of quarries so that the aesthetic quality

of the environment is not destroyed and (b) providing alternative means of employment for workers in the fuel industries when the reserves are depleted.

While forestry is becoming progressively less important, the preservation of wooded areas is becoming increasingly more important in this Region where the pressure of urbanization is so great.

Similarly in the fishing industry, conservation of resources is of vital concern especially as the Region is a major recreational and sport fishing area in Ontario.

Manufacturing, at present, is concentrated in the more urbanized counties of the north and northeast. The regional problem of attracting and stimulating growth in the counties of the southwest may be alleviated by the proposed industrial developments along the Lake Erie shore. A more serious difficulty will be that of inducing growth in other parts of the Niagara Region since approximately half of its employment now lies in the slow growth industries.

Manufacturers face serious shortages of skilled tradesmen. It is yet too early to feel the effects of community colleges in the Region, but these should improve the general quality of the labour force.

The Niagara Region enjoys the advantage of a good location in relation to present and future urban markets. This factor, combined with a deliberate stimulus to the growth of the manufacturing sector, augurs well for the future of the Region.

In terms of construction the Niagara Region has grown favourably in relation to the Province. The familiar pattern of concentration in the more urbanized counties appears in this sector.

The tertiary sector shows evidence of growth. The more developed urban areas of the north and northeast are more important in the retail and wholesale trade categories as seen by their dominance in these types of activity.

CHAPTER V

THE TRANSPORTATION SYSTEM

General Characteristics

Transportation is universally recognized as a vital component in regional development, being intimately related to the location and intensity of various land uses. It is not only a primary generator of economic activity, but it is also a major determinant of the spatial distribution of population and employment. Furthermore, the development of social and economic activities within a region stimulates the creation of an efficient transportation system.

The capacity of a region's transportation system, even in a mature economy such as that of the Niagara Region, is an important determinant of its future development prospects. If the existing system has the excess capacity necessary to meet an increased movement of persons and goods in the future, a region is in an advantageous position providing that the excess is located in the right place at the right time. If, however, future traffic volumes result in congestion of the existing transport arteries because future demand has not been anticipated and improvements made, the regional economy will be at a disadvantage. One task, therefore, of regional development planning is to assess a region's transportation system in terms of its existing and possible future development patterns, isolating both the existing and anticipated problems and recommending alternative solutions.

The Niagara Region is strategically located in Southern Ontario. It forms an east-west land corridor, with the major road and rail linkages concentrated particularly along its northern Lake Ontario shoreline, connecting the population centres of both Southern Ontario and Northern Michigan with those of the Northeastern Seaboard. This corridor, the spine of which is the Queen Elizabeth Way, contains a significant proportion of the Region's population and most of its high-yield economic activity.

This east-west transportation corridor is intersected by a north-south axis based upon the Welland Canal. This canal functions as a vital link in an international waterway system connecting the ports of the Great Lakes with those of the rest of the world. Besides serving international traffic the Canal has been an important generator of economic activity in Southern Ontario, and more specifically has been the reason for the location of a number of important industries along its banks and in the Hamilton area, including the steel and pulp and paper industries.

These two intersecting corridors are, therefore, important links within international transportation systems while simultaneously serving the needs of the Niagara Region's population and economic activities.

TRANSPORTATION FACILITIES AND NETWORKS



Land Transportation

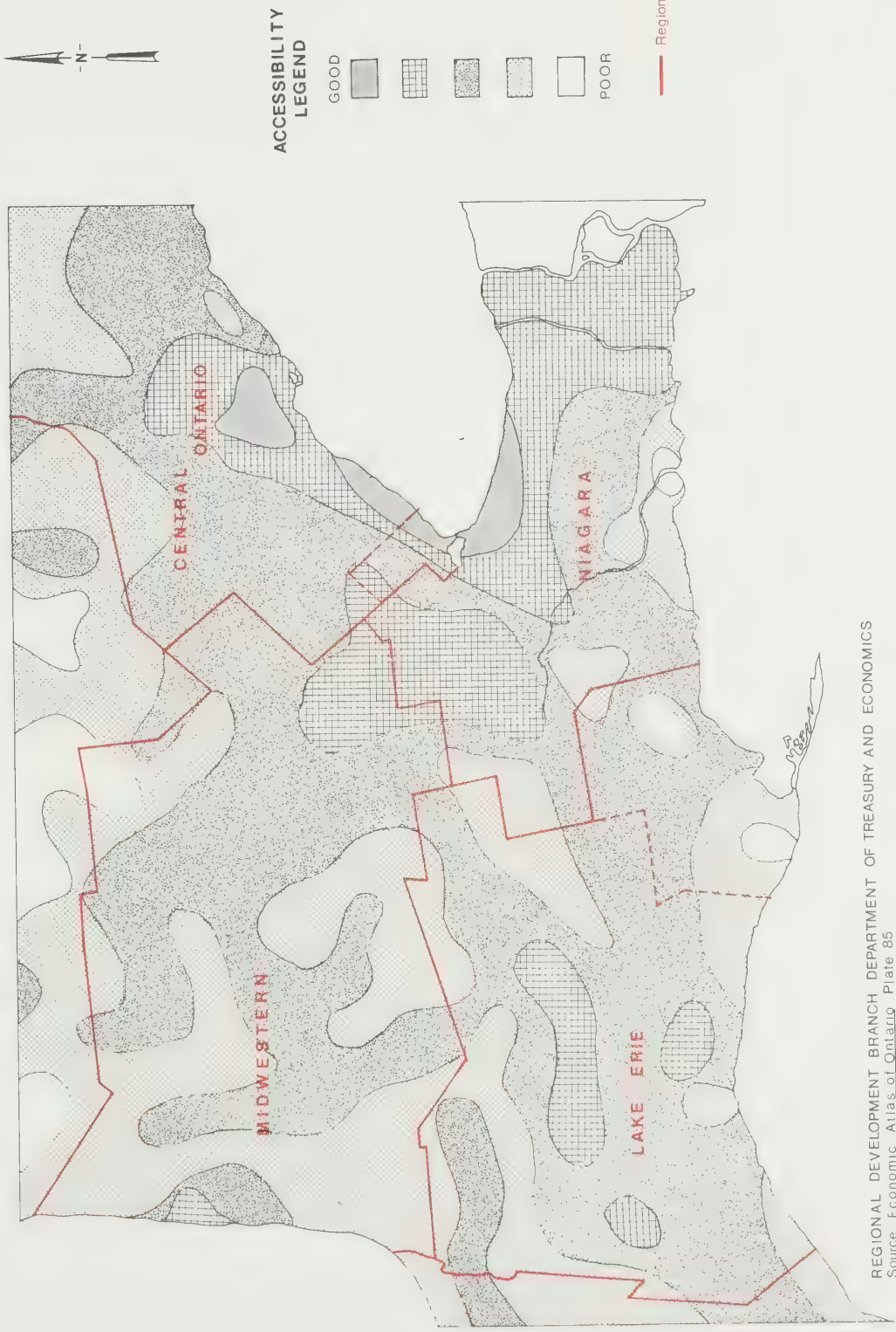
Figure 12 shows the major highways and railways in the Niagara Region. These networks are particularly well developed in an arc stretching from Brantford in the west, through Hamilton, St. Catharines, Niagara Falls and Welland to Fort Erie and Port Colborne in the southeast.

A measure of route intensity may be obtained by placing a hexagonal grid, consisting of 10 mile sections over the total transportation network, and counting the frequency with which routes cross the grid boundaries. Figure 13 shows the density of surface transportation routes, indicating the degree of "local accessibility" (i.e. the ease with which one may travel within an area) and the fact that some areas are more accessible than others. In general, the areas of good local accessibility coincide with the arc mentioned above, with accessibility being best in the immediate environs of Burlington and Hamilton. Accessibility is poorest in Norfolk and Haldimand, reflecting the lower population densities of these counties.

Land Transportation

Road - Data on annual average daily traffic flow for the Niagara Region indicate that the most heavily used route is the Queen Elizabeth Way, particularly from Burlington to Niagara Falls.

ACCESSIBILITY BASED UPON ROUTE INTENSITY



REGIONAL DEVELOPMENT BRANCH, DEPARTMENT OF TREASURY AND ECONOMICS
Source, Economic Atlas of Ontario, Plate 85

Traffic volumes on the Queen Elizabeth Way ranged from 20,000 to 34,000 vehicles per day in 1967.¹ This route provides direct access to the tourist attractions of Niagara Falls and to international border crossings. Secondary areas of intense movement occur among Burlington, Hamilton and Brantford and within the St. Catharines-Port Colborne-Niagara Falls triangle.

There is considerable variation in both the seasonal and daily flow of traffic within the Niagara Region, particularly in the eastern portion. This is largely accounted for by an increase in the volume of recreational traffic in summer, particularly at weekends. On the Queen Elizabeth Way, north of Fort Erie, approximately 80 per cent of the summer daily traffic in 1962 was recreational in character and even east of Beamsville it accounted for 65 per cent of the total volume.² This does not necessarily mean that the volume of recreational traffic decreases towards Hamilton, but rather indicates the growth in the relative importance of other trips, particularly journey-to-work.

Highway 3, west of Fort Erie, exhibited a similar seasonal variation in the intensity of traffic flows and during the summer carried a volume of recreational traffic ranging from 60 to 70 per

¹Average Annual Daily Traffic on the King's Highways and Secondary Highways in Ontario, 1967, Ontario Department of Highways.

²Niagara Peninsula Planning Study, Ontario Department of Highways, 1964, p. 35.

cent of the total volume. A large proportion of this traffic was destined for Crystal Beach and other beaches along Lake Erie.³

During summer there is a considerable daily variation in the volumes of traffic carried along certain routes. Those highways which serve mainly recreational areas, show a high daily variation pattern with peak volumes occurring on Saturdays and Sundays. On the other hand, those routes which serve commuter and other local traffic show little variation in either the daily or seasonal patterns.

Commercial traffic rarely accounted for more than 10 per cent of the total flow along the major highways in Lincoln, Welland and Haldimand during summer and occurred almost exclusively on weekdays. While the Queen Elizabeth Way carried 50 per cent of total east-west truck movement, the percentage of such trucks using this route ranged from only 5.5 per cent near Fort Erie to 7.9 per cent near Grimsby.

Motor coach service which accounts for a small proportion of the actual traffic movements within the Region, is nevertheless an important component of the transportation network. Hamilton, St. Catharines, Niagara Falls and Fort Erie are connected to Toronto by a regular and frequent express coach service while Brantford is

³Brantford Area Highway Planning Study, Ontario Department of Highways, 1968.

connected by direct, though not express, services. The general pattern for the remaining bus services is focussed upon the larger urban centres, Hamilton and St. Catharines being the two main nodal points. In 1965, Hamilton had approximately 1,300 scheduled weekly coach arrivals and departures, more than three times the figure for St. Catharines. With increasing distance from these two centres, coach service becomes more irregular and infrequent.

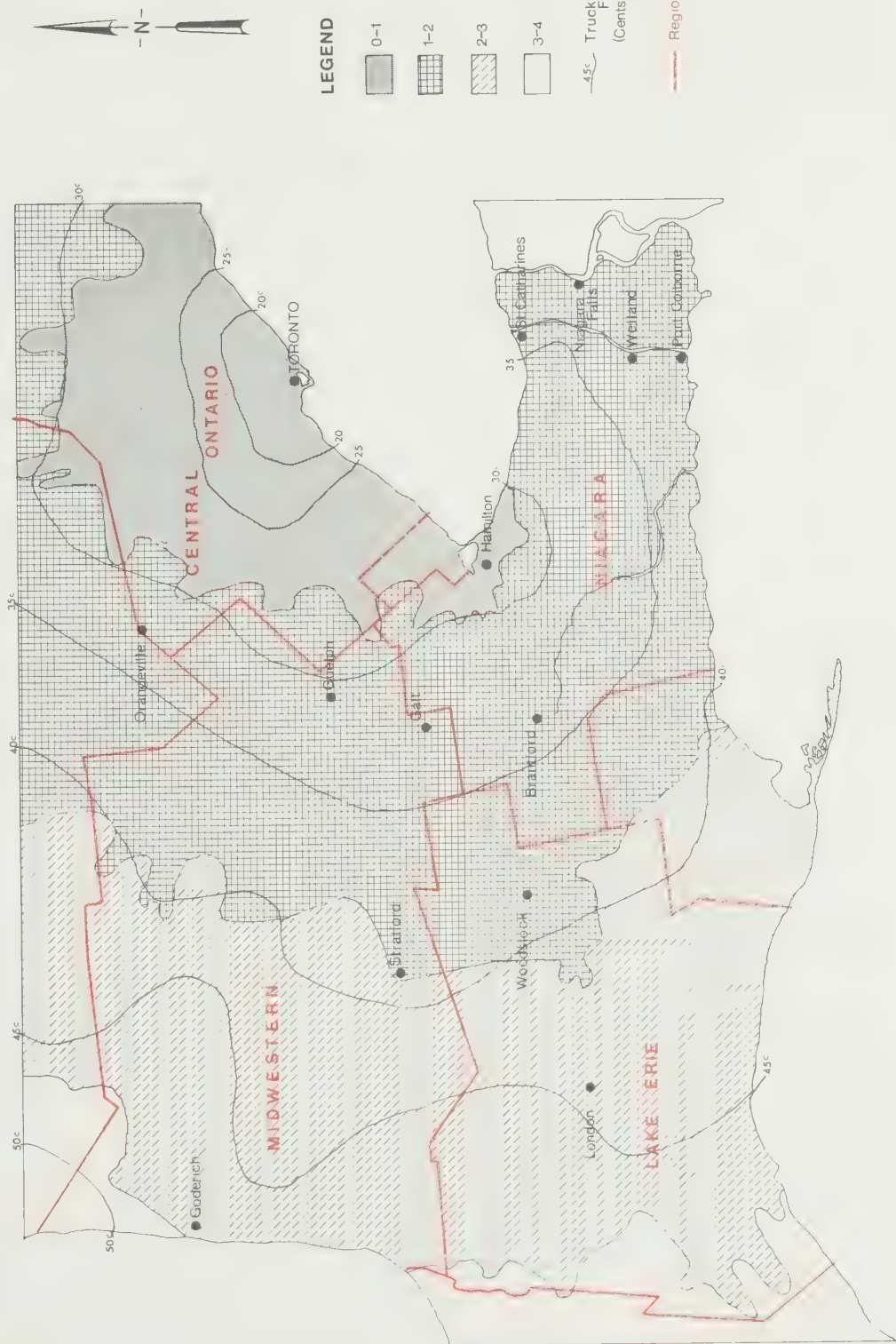
Figure 14 shows accessibility to Toronto as measured by time/distance. All parts of the Region, with the exception of south-western Norfolk, are within two hours driving time of Toronto. Hamilton and Burlington are less than an hour's distance. The Survey of Manufacturing⁴ revealed that good accessibility to Toronto is an important consideration for many manufacturers in the Region who depend upon major urban areas in Ontario as a source of their material inputs and as a destination for their final products.

Rail In general, the importance of the railways has declined in recent years because of increasing car ownership and the shift by manufacturers towards the use of trucks for the movement of goods, particularly over shorter distances.

The Region on the whole is well provided for with regard to passenger and freight services although a large proportion of the

⁴Regional Development Branch, Survey of Manufacturing, 1969 and 1970.

ROAD HOURS AND TRUCK TRANSPORT RATES FROM TORONTO



REGIONAL DEVELOPMENT BRANCH, DEPARTMENT OF TREASURY AND ECONOMICS
 Source : Economic Atlas of Ontario, Plate 94, N.C. Field and D.P. Kerr Geographical Aspects of Industrial Growth
 Metropolitan Toronto Region Regional Development Branch, 1968

services is designed to meet extra-regional needs. Railway freight services are primarily used for the transportation of products between the major urban centres of Canada and the United States on one hand and between major cities in the United States situated to the east and west of Lake Erie on the other. Freight services are also utilized by many industrialists in the Niagara Region. The Survey of Manufacturing⁵ revealed that such services were fairly satisfactory at present. However, on lines where the level of demand is insufficient to warrant the provision of regular and frequent services, some manufacturers stated that they were disadvantaged, particularly in the importing of their manufacturing inputs. Both switching services and piggyback terminals are provided at Hamilton, Brantford, St. Catharines, Niagara Falls, Welland and Fort Erie, and a switching service is provided at Thorold.

Water Transportation

During 1967, approximately 137 million tons of cargo were transported on the Great Lakes and 38.5 per cent of this total passed through the Welland Canal. The Canal thus forms an important link between the ports of the Upper Great Lakes on the one hand and those of Lake Ontario and the rest of the world on the other.

In general, the vessels using the Great Lakes are

⁵Op. cit.

characterized by a large unit load and substantial economies of scale. On those trade routes where the intensity of movements is relatively high, the ships have been adapted both to the cargo carried and the route travelled. A large proportion of the cargo handled is homogeneous in character, for example wheat and coal, so that fast and specialized automatic handling facilities may be employed to load and unload the cargo. The ships therefore have a fast turn-around time and incur lower terminal costs. In contrast, the loading and unloading of general cargo, which cannot be so easily adapted to automatic handling facilities, tends to increase the length of time a ship remains in port and thus increases the terminal costs. Furthermore, the handling of general cargo requires much more investment in loading and unloading facilities than the handling of bulk cargoes. With increasing containerization of general cargo, however, handling costs can be reduced and turnaround times shortened.

Cargo tonnage through the Welland Canal declined by 10.6 per cent between 1966 and 1967, to 52,850,454 tons, while the number of ship passages dropped by 14.3 per cent to 7,455.⁷ Downbound traffic exceeded upbound movements and accounted for approximately

⁷ Recent figures which have just become available, indicate that the tonnage of cargo passing through the Canal had increased to over 58 million tons in 1968, only slightly less than the total tonnage in 1966.

30.5 million tons, or 57.7 per cent of the total tonnage. Tables 5.1 and 5.2 show the breakdown of cargo that passes through the canal by direction and major commodities. The two main kinds of cargo are raw materials, and grain and associated products. Total raw materials accounted for 30,927,658 tons or 58.5 per cent of the total tonnage in 1967 as compared to 31,030,989 tons or 52.5 per cent in 1966. In 1967, iron ore, plate and sheet steel and dolomite accounted for 77.3 per cent of the total cargo tonnage upbound on the Canal, while coal, wheat, iron ore, corn, barley and soya beans accounted for 77.5 per cent of the total tonnage downbound.

TABLE 5.1

CARGO TONNAGE UPBOUND THROUGH THE WELLAND CANAL
BY MAJOR COMMODITIES, 1967

<u>COMMODITY</u>	<u>TONNAGE</u>	<u>% OF TOTAL TONNAGE</u>
Iron Ore	14,077,403	62.9
Plate and Sheet Steel	2,091,293	9.3
Dolomite	1,116,964	4.9
Others	5,086,516	22.7
Total	22,372,176	100.0

Source: Dominion Bureau of Statistics, Canal Statistics, 1967.

TABLE 5.2
CARGO TONNAGE DOWNBOUND THROUGH THE WELLAND CANAL
BY MAJOR COMMODITIES, 1967

<u>COMMODITY</u>	<u>TONNAGE</u>	<u>% OF TOTAL TONNAGE</u>
Coal	8,678,585	28.5
Wheat	7,290,538	23.9
Iron Ore	2,439,220	8.0
Corn	2,266,207	7.4
Barley	1,584,450	5.2
Soya Beans	1,361,175	4.5
Others	6,858,103	22.5
Total	30,478,278	100.0

Source: Dominion Bureau of Statistics, Canal Statistics, 1967.

In 1967 over 14 million tons of cargo passed through the six main ports of the Niagara Region as compared to just over 12 million tons in 1961, an increase of 16.7 per cent. This increase may be attributed to a rise of 2,357,533 tons in the volume of cargo imported into the Region and it more than offsets a decline of 347,295 tons in the volume of cargo exported.

With regard to shipping, the ports in the Niagara Region handle more in-bound than out-bound goods and materials. As table 5.3 shows, 12,001,171 tons or 85.4 per cent of the total trade was

TABLE 5.3

FOREIGN AND COASTWISE TRADE AT NIAGARA PORTS, IN-BOUND AND OUT-BOUND CARGO, 1961 AND 1967

Type Of Trade	1961				1967							
	Out-bound		In-bound		Total		Out-bound		In-bound		Total	
	Tons (1)	% (2)	Tons (3)	% (4)	Tons (5)	% (6)	Tons (7)	% (8)	Tons (9)	% (10)	Tons (11)	% (12)
Foreign	1,305,930	16.14	6,786,889	83.86	8,092,819	100.00	1,558,938	17.74	7,228,154	82.26	8,787,092	100.00
Coastwise	1,086,776	27.56	2,856,749	72.44	3,943,525	100.00	486,473	9.25	4,773,017	90.75	5,259,490	100.00
Total	2,392,706	19.88	9,643,638	80.12	12,036,344	100.00	2,045,411	14.56	12,001,171	85.44	14,046,582	100.00

Source: Canada, Dominion Bureau of Statistics, Shipping Report, 1967, (Ottawa: Queen's Printer), Parts II and III.

accounted for by in-bound cargoes, in 1967 as compared to 9,643,638 tons or 80.1 per cent in 1961. Of the total foreign trade⁸, 82.3 per cent was accounted for by in-bound cargoes, just less than the figure for 1961.

While the total tonnage handled at the six ports of the Region increased from 1961 to 1967, coastwise⁹ trade increased at a much faster rate than foreign trade. In 1961, coastwise trade accounted for 3,943,525 tons or 32.8 per cent of the total tonnage but had increased to 5,259,490 tons or 37.4 per cent in 1967 through a rise in imports. Coastwise in-bound cargo accounted for 72.4 per cent of the total coastwise trade in 1961, but by 1967 had risen to 90.8 per cent.

During this six-year period, therefore, the ports in the Niagara Region have become relatively less dependent upon goods from areas outside Canada but have increased the proportion and

⁸The term "international seaborne shipping" is used for vessels classed as being in foreign service, that is when (1) the vessel arrives from or departs from a foreign port; or (2) cargo is loaded for or unloaded from a foreign port; or (3) the registry of the vessel is other than Canadian or British Commonwealth (even though the vessel may have sailed between two Canadian ports).

⁹A vessel is classed as being in coasting service if (1) it is of Canadian or British Commonwealth registry, sails between two Canadian ports, and loads or unloads no foreign freight; or if (2) it is of foreign registry, but is granted a waiver to engage in coasting service.

volume of their out-bound cargo to these areas.

Hamilton and Port Colborne are the two most important ports in the Niagara Region in terms of tonnage of cargo, accounting for 91 per cent of all the cargo handled at the Region's ports in 1967 as compared to 91.6 per cent in 1961. During this period, however, Hamilton increased its share of the total tonnage from 64.7 to 75.4 per cent while Port Colborne's proportion declined from 24.6 to 16.2 per cent. The four other ports of the Region, with the exception of Welland, registered a decline in the volume of cargo handled.

Tables 5.4 and 5.5, which disaggregate total trade into in-bound and out-bound cargo by ports for the years 1961 and 1967, show the changes in the relative importance of each port in the Region and the changes in their relative dependence upon in-bound and out-bound cargoes. Hamilton accounted for 9,988,348 tons or 83.2 per cent of the total in-bound cargo to the Region in 1967 as compared to 7,292,390 tons or 75.6 per cent in 1961, an increase of 2,695,958 tons. Hamilton is second to Port Colborne in volume of out-bound cargo, but it increased its relative importance within the Region by accounting for 29.6 per cent or 604,732 tons of the total out-bound cargo in 1967 as compared to 20.7 per cent or 495,505 tons in 1961. Its relative importance, however, increased at the expense of Port Colborne, and to a lesser extent Thorold.

TABLE 5.4

CONTRIBUTION OF MAJOR PORTS TO TOTAL REGIONAL SHIPPING TRADE, IN-BOUND AND OUT-BOUND CARGO, 1961 AND 1967

Port	1961			1967			Total		
	Out-bound		In-bound	Out-bound		In-bound	Out-bound		Total
	Tons (1)	% (2)		Tons (7)	% (8)		Tons (9)	% (10)	
Hamilton	495,505	20.71	7,292,390	604,732	29.57	9,988,348	10,593,080	83.23	75.41
Port Colborne	1,652,811	69.08	1,311,818	1,312,784	64.18	960,093	2,272,877	8.00	16.18
St. Catharines	15,322	0.64	392,826	-	-	323,203	323,203	2.69	2.30
Thorold	220,738	9.22	490,372	114,784	5.61	552,315	667,099	4.60	4.75
Welland	8,330	0.35	114,553	13,111	0.64	174,785	187,896	1.46	1.34
Port Maitland	-	-	41,679	-	-	2,427	2,427	0.02	0.02
Total	2,392,706	100.00	9,643,638	2,045,411	100.00	12,001,171	14,046,582	100.00	100.00

- Nil

Source: Canada, Dominion Bureau of Statistics, Shipping Report, 1967, (Ottawa: Queen's Printer), Parts II and III.

TABLE 5.5

IN-BOUND AND OUT-BOUND CARGO AT MAJOR PORTS IN THE NIAGARA REGION, 1961 AND 1967

Port	1961				1967							
	Out-bound		In-bound		Total		Out-bound		In-bound		Total	
	Tons (1)	% (2)	Tons (3)	% (4)	Tons (5)	% (6)	Tons (7)	% (8)	Tons (9)	% (10)	Tons (11)	% (12)
Hamilton	495,505	6.36	7,292,390	93.64	7,787,895	100.00	604,732	5.71	9,988,348	94.29	10,593,080	100.00
Port Colborne	1,652,811	55.75	1,311,818	44.25	2,964,629	100.00	1,312,784	57.76	960,093	42.24	2,272,877	100.00
St. Catharines	15,322	3.75	392,826	96.25	408,148	100.00	-	-	323,203	100.00	323,203	100.00
Thorold	220,738	31.04	490,372	68.96	711,110	100.00	114,784	17.21	552,315	82.79	667,099	100.00
Welland	8,330	6.78	114,553	93.22	122,883	100.00	13,111	6.98	174,785	93.02	187,896	100.00
Port Maitland	-	-	41,679	100.00	41,679	100.00	-	-	2,427	100.00	2,427	100.00
Total	2,392,706	19.88	9,643,638	80.12	12,036,344	100.00	2,045,411	14.56	12,001,171	85.44	14,046,582	100.00

- Nil

Source: Canada, Dominion Bureau of Statistics, Shipping Report, 1967, (Ottawa: Queen's Printer), Parts II and III.

In 1961, 1,652,811 tons or 69.1 per cent of the Region's total out-bound cargo passed through Port Colborne as compared to 1,312,784 tons or 64.2 per cent in 1967. Thorold accounted for 220,738 tons or 9.2 per cent of the Region's total out-bound cargo in 1961, but only 114,784 tons in 1967, representing 5.6 per cent of the total.

All ports, with the exception of Port Colborne, have an excess of in-bound over out-bound cargo. Of the total cargo handled at Hamilton, 9,988,348 tons or 94.3 per cent was accounted for by in-bound cargoes. The main in-bound cargoes are iron ore and bituminous coal which accounted for 8,694,743 tons or 87.0 per cent of the total cargo unloaded. The primary out-bound cargo from Hamilton is plate and sheet steel which accounted for 274,907 tons or 45.5 per cent of the total out-bound commodities. The remainder consists of miscellaneous products which cannot be easily classified.

Out-bound cargo at Port Colborne was 1,312,784 tons or 57.8 per cent of the total volume of cargo handled. Dolomite was the major out-bound commodity accounting for 1,152,760 tons or 87.8 per cent of the total out-bound cargo. Wheat accounted for another 98,221 tons or 7.4 per cent. Four main commodities made up almost 98 per cent of total in-bound cargo. These were in order of total tonnage: wheat, iron ore, coal and fuel oil.

While the other four ports account for only 8.4 per cent of the total cargo handled in the Region, they nevertheless

contribute significantly to the regional economy, in particular to the manufacturing sector. Professors J. Tait Davis and R. J. Tennant,¹⁰ in a recent study on the manufacturing industries of Lincoln, Welland and Haldimand, found that the Welland Canal is an important mode of transportation for the supply of input materials to many manufacturers. Fifteen firms or six per cent of the total sample specifically mentioned the Welland Canal as being of major importance in their location. The major industries dependent upon the canal are: paper and allied products plants, flour mills, iron and steel mills, fabricated metal plants, ship building and repair establishments and fertilizer producers.

Conclusion

The Niagara Region has a transportation network parts of which serve special needs of the Province as well as the general needs of the Region. This network developed because of Niagara's unique position in Southern Ontario and in response to the demand of the Region's activities and people.

The Region's location will be particularly important in the future as a "Great Lakes Megalopolis", suggested by recent studies, develops from Milwaukee to Pittsburgh through Chicago,

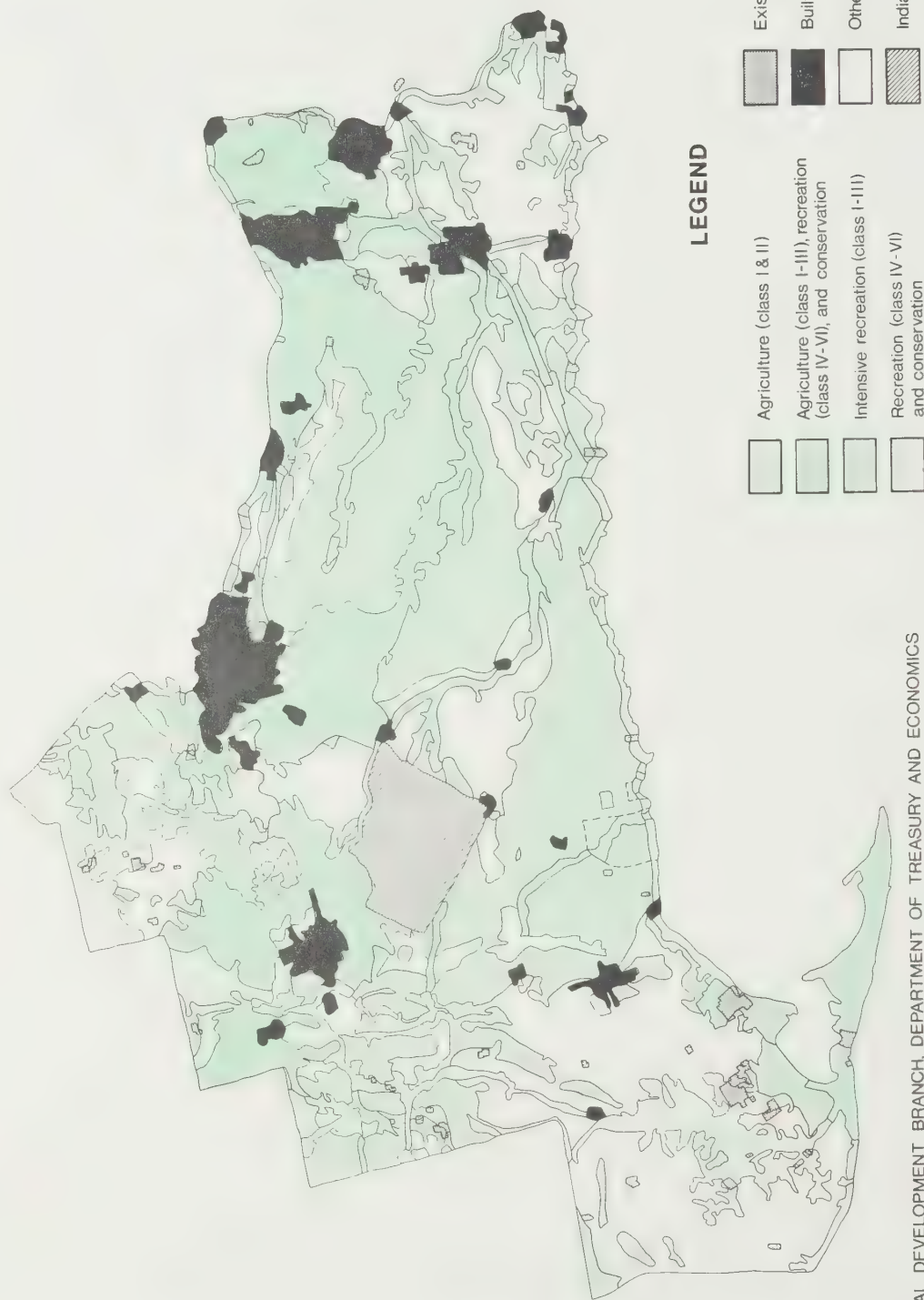
¹⁰ J. Tait Davis and Robert J. Tennant, Price of the Environment and Location of Manufacturers, York University, 1969.

Detroit and Cleveland, with a Canadian extension along the northern shores of lakes Erie and Ontario and the St. Lawrence River to Quebec City, with another extension through the Niagara Region and Buffalo area towards the Eastern Megalopolis.

Already the Lake Erie lakeshore is emerging as a major potential corridor of heavy industrial development for the next 30 years. Thus, the Niagara Region's future transportation system cannot be planned in isolation from the developments in the Great Lakes area generally, and Southern Ontario more specifically. Rather the future transportation system must be planned within an integrated provincial framework where the Region's interests are carefully balanced against those of the wider community.

A positive transportation policy will be designed, not only to relieve existing areas of congestion, but also to stimulate and structure development in other parts of the Region. The transportation pattern should assist in shaping the pattern of future urban growth and provide the Region's residents with easy commuting access to a variety of nearby employment, cultural and service centres, together with access to recreation areas.

NIAGARA (SOUTH ONTARIO) DEVELOPMENT REGION LAND CAPABILITY ANALYSIS



REGIONAL DEVELOPMENT BRANCH, DEPARTMENT OF TREASURY AND ECONOMICS
Source: Canada Land Inventory

CHAPTER VI
PHYSICAL LAND CAPABILITY¹

The physical capability of an area of land is its potential for various types of resource development. However, the suitability for resource development is determined in relationship to the ability of the environment to sustain itself at a desired level of quality. Figure 15 illustrates the land capability of the Niagara Region. When the map of present land use in Chapter II (Figure 3) is compared with the land capability analysis map on the following page, the relationship between the actual and the potential uses of the Region's natural resources can be clearly seen. The land capability analysis map does not show what the future land use pattern of the Niagara Region will be, but rather what the different types of land in the Region are best suited for in terms of their physical characteristics.

The land capability analysis map was prepared primarily from data in the Canada and Ontario Land Inventories. The Canada Land Inventory distinguishes seven classes of agricultural land, based upon the land's potential for mixed farming, particularly the quality of the soil. Attention has been focussed upon land of Classes I, II and III in the Niagara Region. Recreational land is also divided into seven classes based upon the intensity of recreational use which an area of land can support. Classes I to VI were considered in the Niagara Region. A more detailed

¹Victor Chanasyk Associates are at present conducting an intensive land-use study of Haldimand and Norfolk Counties, the findings of which were unfortunately not yet available at the time this report was completed.

definition of the various land capability classes can be found on Table 6.1.

The land capability analysis map is a product of combining land capability for agriculture and recreation with existing woodland areas, environmental and/or physical hazard areas, existing public open space and built-up urban areas. Each of these factors was outlined on a separate transparent sheet, and overlaid in the traditional sieve mapping manner. This approach permitted these development factors to be effectively assimilated into the six general categories shown on Figure 15.

1. Agriculture

These are areas consisting entirely of Classes I and II soil capability for agriculture. The soils in these areas have a high potential for agricultural production. Those in Class I are the most suitable for a wide variety of crops because of their depth, excellent quality, water retention and moderately high to high level of productivity. Class II soils have moderate limitations that restrict the range of crops or require more intensive conservation practices.

The land capability analysis map indicates that the Region is well-endowed for agricultural production. As illustrated by Figure 16, the Region has five per cent of the Province's

LAND CAPABILITY FACTORS, TOWNSHIP ACRES¹ AND PERCENTAGES, NIAGARA REGION, 1970

	AGRICULTURE CAPABILITY ²						RECREATION CAPABILITY						AGRICULTURE AND RECREATION CAPABILITY				EXISTING WOODLAND AREAS	
	Agriculture Class I ³		Agriculture Class II ⁴		Agriculture Class III ⁵		Recreation Class I-III ⁶		Recreation Class IV-VI ⁷		Agriculture - I-III		Recreation - IV-VI					
	(1)	%	(2)	%	(3)	%	(4)	%	(5)	%	(6)	%	(7)	%				
BRANT	57,290	25	79,635	35	41,010	18	-	-	28,290	12	93,487	40	41,236	18				
	21,815	28	25,920	33	15,825	20	-	-	-	10	40,976	52	11,032	14				
	8,295	13	34,635	53	2,700	04	-	-	8,546	13	5,917	09	15,120	23				
	13,790	28	12,860	26	13,065	26	-	-	11,400	23	33,704	68	10,904	22				
	2,070	18	4,355	38	1,870	16	-	-	464	04	581	05	3,251	28				
	11,320	49	1,865	08	7,550	33	-	-	-	-	12,309	53	929	04				
HALDIMAND	40,805	13	206,065	66	33,175	11	5,086	01	3,419	01	58,544	18	50,625	16				
	-	-	19,970	91	-	-	-	-	220	01	2,202	10	8,368	38				
	7,985	24	14,585	45	7,630	23	-	-	-	-	4,586	14	9,500	29				
	460	03	14,335	86	565	03	-	-	-	-	2,163	13	5,325	32				
	770	04	13,055	75	1,020	06	1,392	08	1,044	06	2,959	17	2,785	16				
	-	-	19,195	54	-	-	2,150	06	1,433	04	6,090	17	2,508	07				
	17,665	39	8,960	20	15,360	34	-	-	-	-	9,969	22	12,235	27				
	-	-	26,365	96	255	01	822	03	-	-	3,834	14	1,917	07				
	7,985	18	29,180	67	5,325	12	-	-	-	-	16,633	38	4,377	10				
	5,940	08	60,420	84	3,020	04	722	01	722	01	10,108	14	3,610	05				
LINCOLN	18,830	10	119,880	64	25,890	14	3,326	02	1,613	01	77,269	41	30,107	16				
	280	01	33,640	97	120	-	-	-	-	-	7,283	21	10,057	29				
	5,845	22	8,240	31	9,235	34	-	-	-	-	16,616	62	3,216	12				
	2,830	07	35,680	88	1,210	03	-	-	-	-	10,994	27	4,479	11				
	3,675	19	5,760	31	3,565	19	566	03	-	-	3,398	18	2,643	14				
	505	03	17,640	87	215	01	-	-	202	01	4,040	20	1,212	06				
	4,095	19	8,600	41	4,745	23	422	02	632	03	16,232	77	5,902	28				
	1,600	06	10,320	40	6,800	26	2,338	09	779	03	18,706	72	2,598	10				
	WELLAND	17,970	08	73,185	33	93,640	42	8,083	04	22,917	10	34,204	15	30,652	14			
		-	-	8,700	22	25,085	63	1,984	05	3,174	08	5,157	13	4,364	11			
-		-	5,630	27	14,850	71	-	-	-	-	420	02	1,889	09				
-		-	2,560	08	22,015	67	2,283	07	2,283	07	-	-	6,849	21				
4,605		15	17,260	58	4,100	14	-	-	8,688	29	11,385	38	4,494	15				
770		03	19,070	70	4,090	15	-	-	2,713	10	5,969	22	2,170	08				
12,595		23	16,125	30	8,140	15	3,816	07	5,452	10	7,633	14	9,268	17				
-		-	3,840	19	15,360	76	-	-	607	03	3,640	18	1,618	08				
WENTWORTH		71,780	26	60,820	22	65,780	24	1,562	01	48,059	18	88,054	32	63,666	23			
		17,745	37	9,720	20	15,295	32	-	-	9,173	19	16,898	35	6,759	14			
	14,250	20	12,360	17	16,710	23	-	-	26,936	37	13,832	19	26,936	37				
	13,295	48	6,860	25	5,505	20	-	-	-	-	16,632	60	3,881	14				
	4,415	13	11,800	34	4,585	13	-	-	7,024	20	4,214	12	14,750	42				
	7,530	22	8,000	23	6,070	18	344	01	3,100	09	11,021	32	7,577	22				
	9,200	38	3,020	13	10,520	44	-	-	-	-	21,804	91	719	03				
	5,345	18	9,060	30	7,095	23	1,218	04	1,826	06	3,653	12	3,044	10				
	NORFOLK	16,275	04	124,920	31	10,865	03	55,450	14	31,232	08	18,550	05	141,889	35			
		2,300	04	8,705	14	1,540	02	14,603	23	8,254	13	2,540	04	41,269	65			
-		-	3,070	09	-	-	687	02	3,433	10	1,030	03	17,506	51				
1,535		03	5,885	13	1,025	02	-	-	2,692	06	897	02	11,665	26				
4,300		07	49,660	76	2,870	04	-	-	1,300	02	9,103	14	7,802	12				
2,765		07	-	-	1,845	04	-	-	12,177	29	-	-	18,896	45				
4,145		06	13,825	21	2,765	04	40,160	74	2,714	05	-	-	14,653	27				
1,230		03	28,415	80	820	02	-	-	662	01	-	-	25,830	39				
-		-	-	-	-	-	-	-	-	-	4,980	14	4,268	12				

¹Size of Townships taken from Canada Land Inventory, ARDA information. Townships covered mainly by urban development and Indian reserves excluded.

²This category includes the land listed under Agriculture and Recreation Capability. Figures for Agriculture Capability are taken from Canada Land Inventory tables. Other figures are approximate.

³According to the Canada Land Inventory Class I soils have no significant limitations in use for crops. They are deep, have good water-holding capacity and in the virgin state were well supplied with plant nutrients. They are moderately high to high in productivity for a wide range of field crops.

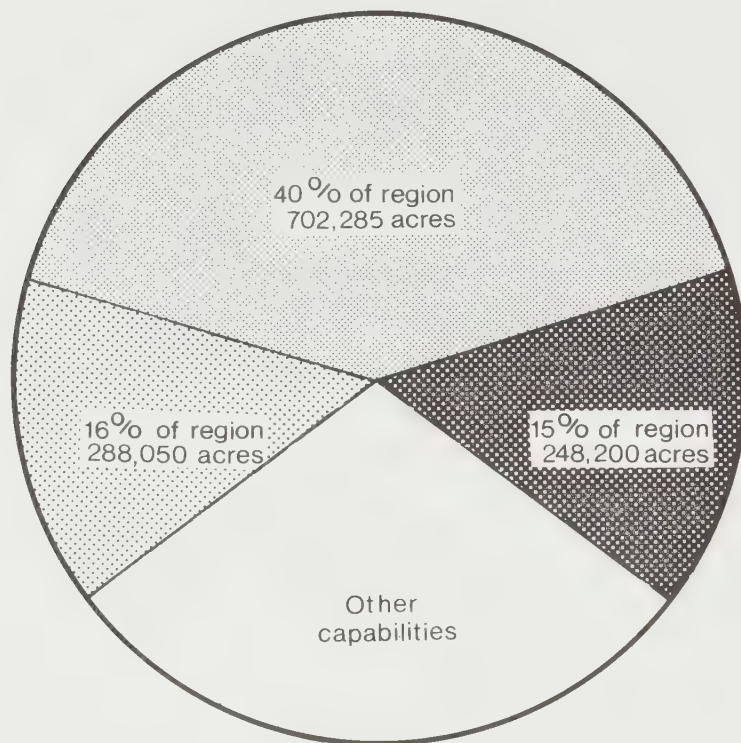
⁴Class II soils have moderate limitations that restrict the range of crops. They may require more intensive conservation measures, tillage practices and special soil-conserving systems than Class I soils.

⁵Class III soils have moderately severe limitations restricting the range of crops, the timing and ease of tillage, planting and harvesting and they need special methods of conservation.




⁶According to the Canada Land Inventory, Class I-III recreation lands have a very high to moderately high capability for outdoor recreation. That is, they have a natural capability to engender and sustain a very high to moderately high total annual use, based usually on intensive or moderately intensive activities.

⁷Class IV-VI lands for recreation have moderate to low capability for outdoor recreation. They have a natural capability to engender and sustain low total use based on dispersed activities.

NIAGARA (SOUTH ONTARIO) DEVELOPMENT REGION PROPORTION OF AGRICULTURAL LAND BY CAPABILITY CLASS REGIONAL & PROVINCIAL



CRITERIA OF AGRICULTURAL LAND CAPABILITY

AGRICULTURE CAPABILITY CLASS	% OF PROVINCIAL TOTAL	
 CLASS I LAND	6%	Soils in this class have no significant limitations in use for crops
 CLASS II LAND	15%	Soils in this class have moderate limitations that restrict the range of crops or require moderate conservation practices
 CLASS III LAND	8%	Soils in this class have moderately severe limitations that restrict the range of crops or require special conservation practices

NOTE - CLI Agriculture Classes range from I through VII

Class I land, (228,465 acres), and 15 per cent of the Class II land (720,550 acres). Approximately 55 per cent of the Region is covered by either Class I or II land. Table 6.1 shows the acreages of this land on a township and county basis.

Several major areas of excellent agricultural potential stand out. Two relatively small but important blocks of Class I agricultural land are found in Wainfleet and Binbrook townships. Furthermore, these townships showed an 8.4 per cent and 1.1 per cent increase, respectively, in the acreages of improved farmland between 1961 and 1966.

Class II land accounts for the major proportion of land in the Niagara Region having a high potential for agriculture. There are four large and continuous belts of Class II land in the interior of the Region:

- a. Between the Niagara Escarpment and Twenty Mile Creek in the townships of South Grimsby and Clinton.
- b. Between Twenty Mile Creek and the Welland River in the townships of Caistor and Gainsborough.
- c. Between the Welland River and the Grand River in the townships of Seneca, North Cayuga and Gainsborough.

TABLE 6.2

RELATIONSHIP OF IMPROVED FARMLAND, 1966, TO SOIL CAPABILITY, TOWNSHIPS,
NIAGARA REGION

	Improved Farmland 1966 (Acres) (1)	% Of Township Area (2)	Class I & II Agricultural Land (Acres) (3)	% Of Township Area (4)
BRANT	173,138	64	174,010	64
Brantford	59,005	89	47,735	60
Burford	47,325	69	42,930	65
Dumfries, South	36,273	80	26,650	53
Oakland	6,751	59	6,425	55
Onondaga	18,540	80	13,185	56
Indian Reserves	5,244	12	37,085	91
HALDIMAND	227,568	73	246,870	78
Canborough	17,174	77	19,970	90
Cayuga, North	27,263	81	22,570	68
Cayuga, South	9,996	66	14,795	88
Dunn	10,680	63	13,825	80
Moulton	16,727	58	19,195	53
Oneida	30,418	72	26,625	58
Rainham	21,980	82	26,365	97
Seneca	32,285	74	37,165	84
Sherbrooke	2,984	54	n. a. (1)	n. a. (1)
Walpole	56,760	80	66,360	92
LINCOLN	137,006	65	138,710	73
Caistor	22,678	67	33,920	97
Clinton	19,436	72	14,085	52
Gainsborough	31,513	75	38,510	94
Grimsby, North	9,894	94	9,435	51
Grimsby, South	14,075	71	18,145	89
Louth	14,260	76	12,695	60
Niagara	25,150	76	11,920	45
WELLAND	102,683	42	91,155	40
Bertie	13,187	47	8,700	21
Crowland	6,592	38	5,630	26
Humberstone	14,544	47	2,560	07
Niagara Falls	6,084	22	n. a.	n. a.
Pelham	16,801	52	21,865	72
Thorold	9,143	40	19,840	73
Wainfleet	30,963	58	28,720	52
Willoughby	5,369	20	3,840	18

RELATIONSHIP OF IMPROVED FARMLAND, 1966, TO SOIL CAPABILITY, TOWNSHIPS,
NIAGARA REGION (Cont'd.)

	Improved Farmland 1966 (Acres) (1)	% Of Township Area (2)	Class I & II Agricultural Land (Acres) (3)	% Of Township Area (4)
WENTWORTH	147,410	50	132,600	48
Ancaster	26,753	61	27,465	56
Beverly	37,722	52	26,610	36
Binbrook	21,516	79	20,155	72
Flamborough, East	16,295	58	16,215	47
Flamborough, West	13,560	44	15,530	45
Glanford	15,515	67	12,220	51
Saltfleet	16,049	49	14,405	48
NORFOLK	255,057	63	141,195	34
Charlotteville	29,206	48	11,005	17
Houghton	19,407	56	3,070	08
Middleton	30,799	66	7,420	16
Townsend	52,444	79	53,960	83
Walsingham, North	28,774	68	2,765	06
Walsingham, South	19,995	38	15,360	28
Windham	49,815	73	17,970	28
Woodhouse	24,617	68	29,645	83

(1) Included in Moulton Township.

n.a. Not available.

Note: ARDA and D.B.S. data on township areas not strictly comparable.

Sources: Canada, Dominion Bureau of Statistics, Census of Canada, Agriculture,
1966, (Ottawa: Queen's Printer), Tables 27 and 13.
A.R.D.A., Canada Land Inventory, Ontario Statistics, Soil Capability
for Agriculture, Special Tabulation, 1969.

- d. The Lynn River and the drainage basins of the Nanticoke, Sandust and Stoney creeks in Haldimand.

Additional areas of Classes I and II agricultural land are scattered throughout the Region. However, their smaller and relatively discontinuous nature negates their potential in terms of prime suitability for agricultural production. This is especially true in the western sections of the Region where a large proportion of the land is either Class I or II, intermixed with lower capability agricultural land and woodlands.

Generally there is concurrence between a township's land capability and the actual intensity of agricultural activity carried on there, as measured by the amount of improved farm land. This relationship is shown on Table 6.2. Wherever the proportion of Classes I and II agricultural land is considerably higher than the proportion of improved farmland, an area of potential expansion for agriculture exists. Conversely, wherever the proportion of Classes I and II agricultural land is lower than the proportion of improved farmland, this indicates that land of Class III soil capability or less has been improved.

Neither the Canada Land Inventory soil capability for agriculture nor the statistics on acreages of improved farmland adequately reflect two highly specialized commercial agricultural areas in the Region, the fruit belt and the tobacco growing areas in Norfolk County. The fruit belt in 1968 had 45,187 acres in

fruit and vegetable production, primarily concentrated in the townships of Clinton, Louth and Niagara. The total acreage in Norfolk County suitable for the production of flue-cured tobacco in 1968 was 287,500 acres. There were 67,266 acres actually under tobacco cultivation in that year, accounting for 44 per cent of the total provincial acreage. Tobacco is found mainly on Class IV soils and accounts for the significant difference between improved farmland and the amount of Class I and II agricultural lands in Norfolk County.

2. Intensive Recreation

These areas consist entirely of Classes I, II and III recreational land as defined by the Canada Land Inventory. This is land having a high to moderately high capability for sustaining intensive total annual recreation use. The regional distribution of potentially intensive recreation areas is clearly depicted in the land capability analysis map. These areas are aligned along several recreation corridors of both regional and provincial significance, in particular the Lake Ontario and Lake Erie shorelines, the Niagara Escarpment and the Niagara River. The location, size and activities of each site are summarized on Table 6.3. It should be noted that although both Long Point and Turkey Point Parks are shown on Figure 15 as having capability for intensive recreational use, many experts feel that due to ecological and environmental factors they are more suited to less intensive uses.

3. Recreation and Conservation

These are areas which consist entirely of Classes IV, V and VI recreation land. They have moderately low to low

TABLE 6.3

POTENTIAL INTENSIVE RECREATION AREAS, NIAGARA REGION, 1970

<u>Location</u>	<u>Approximate Size in Acres</u>	<u>Capability Class</u>	<u>Attractions and Activities</u>
<u>Lake Erie Shoreline</u>			
Clear Creek	350	I	A small area of Class I capability with beaches and organized camping.
Long Point	50,000	I	This is an exceptional area for recreation, both for its size and capability. It has large areas of Class I land. Attractions are beaches, wetland wildlife and angling.
Turkey Point	6,500	II & III	A mixture of Class II and III land with angling and wetland wildlife and some beaches and camping.
St. Williams Forest	160	II	An area of Class II capability with outstanding vegetation and man-made features including an historic site.
West of Grand Point	1,120	II & III	A strip of Class II and III capability with beaches, organized camping and views.

POTENTIAL INTENSIVE RECREATION AREAS, NIAGARA REGION, 1970 (Cont'd.)

<u>Location</u>	<u>Approximate Size in Acres</u>	<u>Capability Class</u>	<u>Attractions and Activities</u>
<u>Lake Erie Shoreline (Cont'd.)</u>			
Between Splatt and Mohawk Bays	640	II & III	A strip of Class II and III capability with beaches and organized camping. The area has interesting topographical features and facilities for yachting and deep water boat trips. Items of popular interest such as rocks, fossils and driftwood can be collected.
West of Grabell Point	500	II	A Class II area with beaches and organized camping.
East of Morgan Point	900	II	A Class II area with beaches and organized camping.
West of Point Albino	1,100	II	A Class II area with beaches, organized camping and interesting topographical features.
East of Point Albino	960	I	A Class I area with beaches and organized camping.
Other areas		III	These are Class III with beaches and organized camping.

POTENTIAL INTENSIVE RECREATION AREAS, NIAGARA REGION, 1970 (Cont'd.)

<u>Location</u>	<u>Approximate Size in Acres</u>	<u>Capability Class</u>	<u>Attractions and Activities</u>
<u>Niagara River</u>			
Niagara Falls	500	I	Class I capability with waterfalls, rapids, views and rock formations.
River from north of Niagara Falls to Queenston	1,100	II & III	A mixed Class II and III capability area with good views, rock formations and man-made features, including an historic site.
Between Queenston and Niagara-on-the-Lake	150	II	A small area of Class II capability with viewing, lodging and an historic site.
Mouth of Niagara River	800	II & III	Class II and III land with historic sites, views, man-made features and family boating.
<u>Lake Ontario Shoreline</u>			
West of Niagara-on-the-Lake	900	III	A Class III area with beaches and organized camping.
Jordan Harbour	250	III	A Class III area with family boating and angling.
Fifty Mile Point	450	III	A Class III area with beaches, viewing and organized camping.

POTENTIAL INTENSIVE RECREATION AREAS, NIAGARA REGION, 1970 (Cont'd.)

<u>Location</u>	<u>Approximate Size in Acres</u>	<u>Capability Class</u>	<u>Attractions and Activities</u>
<u>Niagara Escarpment</u>			
St. Catharines to Hamilton	1,550	III	There are five small areas on the Escarpment face of high recreational capability. There are four Class III capability areas for viewing and topographic patterns, with the addition, at Balls Falls, of waterfalls and rapids and an historic site.
Northwest of Dundas	450	II	A Class II area for waterfalls and rapids, viewing and topographic patterns.

capability for outdoor recreation based upon dispersed activities. Adjacent areas of woodland larger than 100 acres, and adjacent environmental and/or physical hazard areas have also been included in this category.

The areas of recreation and conservation potential shown on Figure 15 are areas that could best satisfy the need for regional open space. The main concentrations of land with potential for regional open space are found along the Lake Ontario and Lake Erie shorelines, the Niagara River and the Niagara Escarpment. Other important areas are the valley corridors of Twenty Mile Creek, Welland River, Grand River, Big Creek and Spencer Creek; the Dundas Valley Area; the Effingham and Fonthill area; the major peat bog northwest of Port Colborne; and the Welland Canal. The location, extent and type of activity found in each zone are summarized in Table 6.4.

The recreation and conservation resources of Haldimand and Norfolk counties are of particular importance due to their accessibility from rapidly growing urban areas such as London and Kitchener-Waterloo, as well as the probable future large urban centres within the two counties.

4. Agriculture, Recreation and Conservation

These are areas having both Classes I, II and III potential for agriculture and Classes IV, V and VI potential for recreation. As in the case of the recreation and conservation areas discussed perviously, adjacent woodlands larger than 100 acres, and adjacent environmental and/or physical hazard areas have been included. Because these areas contain several

TABLE 6.4

RECREATION AND CONSERVATION AREAS, NIAGARA REGION, 1970

<u>Location</u>	<u>Capability Class</u>	<u>Attractions and Activities</u>
<u>Lake Ontario Shoreline</u>	IV	This shoreline recreation corridor is mainly Class IV land with beaches, interesting topographic features, viewing, organized camping and lodging with some family boating. Large sections of the shoreline are currently intensively developed for private recreation use.
<u>Lake Erie Shoreline</u>	IV, V and VI	Activities along the eastern part of the shoreline are viewing, rock formation with some gathering and collecting. Further west, beaches, lodging and topographic patterns assume more importance. The amount of Class V capability increases slightly in the western part of the corridor. There are several areas of recreational capability which form a link between the shoreline corridor and other inland major areas, and have a low, Class VI, capability. From east to west these are: an area of man-made features west of Fort Erie, the Welland Canal and an area of outstanding vegetation, and man-made features and upland wildlife north-west of Humberstone.
<u>Niagara River Zone</u>	IV	The high capability Class I-III areas discussed on Table 6.3 are linked by Class IV areas of viewing and lodging activities along most of the river.

RECREATION AND CONSERVATION AREAS, NIAGARA REGION, 1970 (Cont'd.)

<u>Location</u>	<u>Capability Class</u>	<u>Attractions and Activities</u>
<u>Hamilton-Queenston Corridor</u>	V	A large part of the non-built-up strip of land between the coastal zone and the Escarpment from Queenston to Hamilton is Class V capability, with interesting landscape features, upland wildlife and, in the river valleys, angling, topographic features and wetland wildlife.
<u>Niagara Escarpment</u>	IV and V	The Niagara Escarpment is classed as Class IV and V land for viewing and topographic features, and has some upland wildlife capability.
<u>Norfolk, Brant and Wentworth Counties</u>	VI	Big Creek and its tributaries together form a large area of recreation land in Norfolk County, linking up with recreation areas in Brant County. Big Creek is a Class VI area with topographic features, upland wildlife and some angling near Lake Erie. There are also large areas of woodland which have some recreational value in Norfolk County.
<u>Brant</u>	V and VI	Brant County is covered by extensive areas of Class VI capability with landscape features, upland wildlife and topographic features. Within these areas are several river valleys, notably the Grand River, which generally have Class V capability for angling and canoeing.

RECREATION AND CONSERVATION AREAS, NIAGARA REGION, 1970 (Cont'd.)

<u>Location</u>	<u>Capability Class</u>	<u>Attractions and Activities</u>
Norfolk, Brant and Wentworth Counties (Cont'd.)		
Wentworth	VI	Wentworth County is similarly covered by a large area of Class VI land with upland wildlife, and cultural and topographic features. River valleys again have a higher capability with angling and canoeing as the dominant activities.
Other Areas	V	There are a number of important river valleys, with a mainly east-west alignment across the study area. These are very important as they form links between the various large inland areas of recreation capability and those of the Lake Erie shoreline and the Niagara River. The Grand and Welland rivers and their tributaries are the most important links, with Class V capability for angling, canoeing and wetland wildlife activities.

compatible potential uses, they should be given high priority for intensive resource development.

Figure 15 shows four principal areas of this type of land in the following townships:

- a. Niagara Township - mainly Class II agricultural land and Class V recreational land.
- b. Louth, Clinton and Pelham Townships - mainly Class II agricultural land with Classes IV, V and VI recreational land.
- c. Glanford and Binbrook townships - Classes I and II agricultural land and Class VI recreational land.
- d. South Dumfries, the western half of Onondaga and northeastern Brantford townships - mainly Class I agricultural land with Class VI recreational land.

The greatest significance should be attached to the first two areas listed above, (a) and (b) combined. They represent one of the most intensive commercial agricultural areas in the Province and a major area of tourism and recreation. This section of the fruit belt in particular, should be maintained as

a sub-regional unit for combined agricultural specialization and dispersed recreation activities.

5. Urban Built-up Area

The land capability analysis map shows the existing urban built-up area associated with each urban centre within the Region. The area shown is the same as that of urban land uses shown on the land use map in Chapter II.

6. Existing Public Open Space

These are areas at present under public ownership that function as some form of public open space. They include the Niagara Parks Commission and Conservation areas.

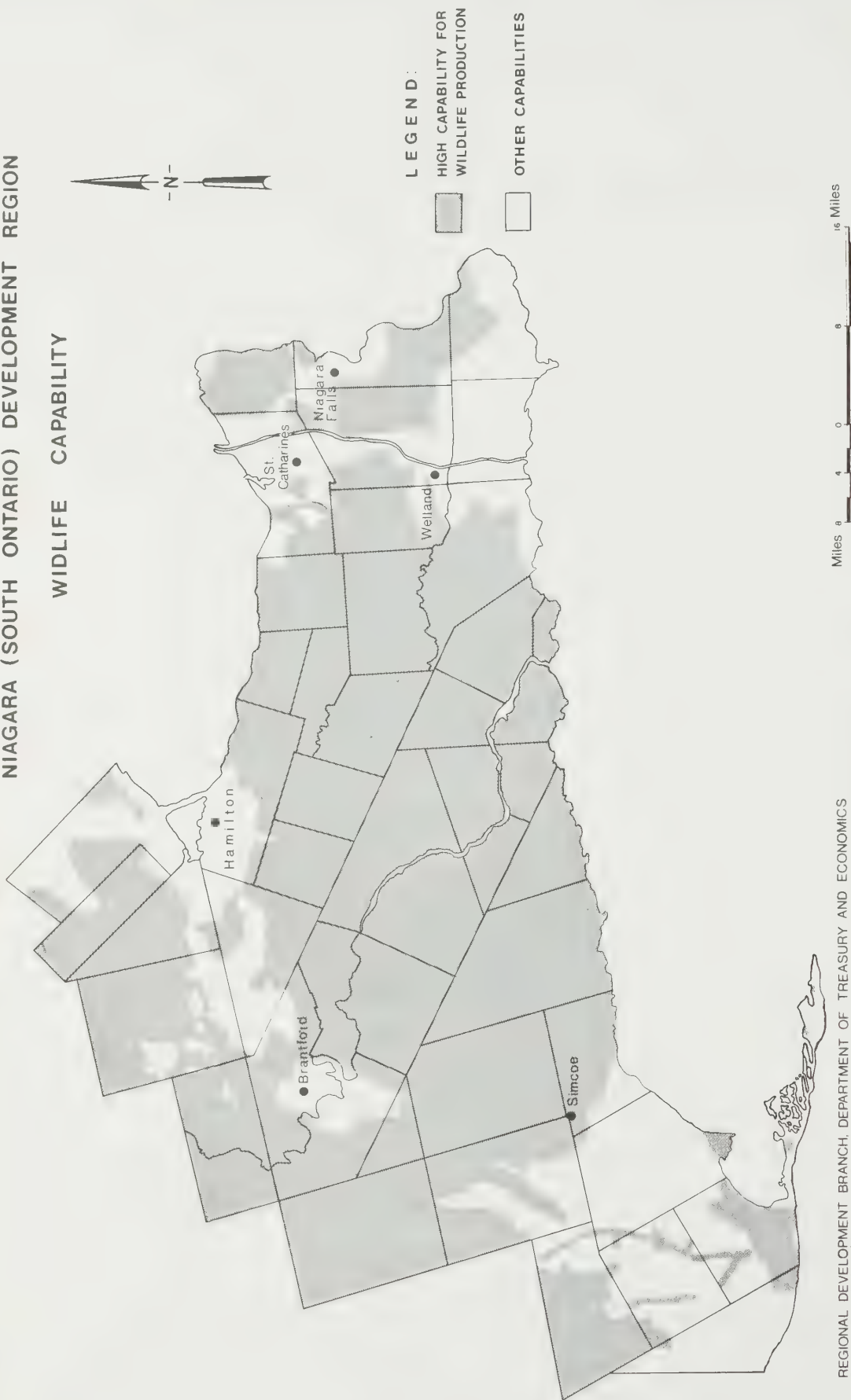
The following three categories of land are significant in the Niagara Region, but do not appear separately upon the overall land capability analysis map, (Figure 15).

1. Regional Capability for Wildlife Production

Land in the Niagara Region with high capability for wildlife production was outlined from Ontario Land Inventory information. It was classified according to the habitat requirements of the various species represented in the Region as follows:

NIAGARA (SOUTH ONTARIO) DEVELOPMENT REGION

WILDLIFE CAPABILITY



REGIONAL DEVELOPMENT BRANCH, DEPARTMENT OF TREASURY AND ECONOMICS
Source: Ontario Land Inventory, Dept. of Lands and Forests.

- a. Woodland Wildlife - Class III land capability for whitetail deer.
- b. Waterfowl - Classes I, II and III land capability for ducks, and Classes I and II capability for geese.
- c. Farmland Wildlife - Classes I and II land capability for Hungarian partridge, Classes I, II and III land for ring-necked pheasants when on Classes III-VII agricultural land, and Class I land for ruffed grouse in Norfolk and Haldimand counties.

The acreages of these three categories were combined, and the totals shown on Table 6.1. It is evident from this table that a large percentage of the land area of the Region has a high capability for some form of wildlife. The distribution of this land is shown on Figure 17.

Wildlife capability is compatible with agricultural and recreational potential. It can, therefore, be considered an additional factor enhancing the overall regional significance of some of the agricultural, recreational and conservation zones depicted on Figure 15.

There are several major zones of high wildlife capability:

- a. A very large area in the centre of the Region covering most of Haldimand, large parts of Brant, southern Wentworth, western Lincoln and western Welland counties. This overlaps with many areas having potential for agriculture, recreation and conservation.
- b. An area in the northwestern part of Norfolk County linked by the Big Creek Valley to an area in the south extending from Clear Creek to Turkey Point.
- c. A large area in the northern part of Wentworth County.
- d. The northeastern part of Lincoln County.
- e. The eastern part of Welland County.

2. Existing Woodlands

The Niagara Region has no woodland areas of major commercial significance. A possible exception is the St. Williams Forest which is a major forest nursery in the Township of South Walsingham. There are approximately 14,000 acres of woodland in

this particular township. A considerable number of woodland areas of over 100 acres in size are scattered throughout the Region.

Table 6.1 gives a statistical breakdown of the regional distribution of woodlands on a township basis. From this table it can be seen that a number of townships widely distributed throughout the Region have over 15 per cent of their land area in woodland. Norfolk County has the greatest amount of woodland in the Region.

Existing woodlands, whether or not commercially significant, may be considered an important regional open space asset. They are generally found in association with poorer agricultural soils and river valleys. All major woodlands have a recreational and aesthetic value, especially when found in combination with land of recreational potential.

3. Environmental Hazards

Lands which have inherent environmental hazards are areas of poor drainage, organic soils, susceptibility to flooding, steep slopes or any other physical condition which leads to the deterioration or degradation of the environment. Lands so designated are intended primarily for preservation and conservation of the natural land and/or environment. Most of the environmental hazard areas in the Niagara Region are associated with the recreation corridors formed by the major river valleys. Land which is unsuited to intensive development owing to environmental hazards should be

maintained as open space. Such land could be used as developmental buffers or screens which could effectively limit urbanization.

Summary The physical land capability analysis suggests what the different types of land in the Niagara Region are best suited for in terms of their physical characteristics.

The Region exhibits a relatively high physical capability for various types of resource development. The Region is well-endowed for agricultural production. It contains two vital areas of agricultural specialization: the fruit belt and the tobacco growing areas of Norfolk County. There are a number of areas with a high capability for intensive outdoor recreational use. A potential regional open space system for recreation and conservation exists based primarily on major river valleys, shorelines, escarpments, and large zones of low capacity for intensive recreational use. Significant areas of existing woodland and environmental hazards can be included as part of the open space system. The region shows a high level of capability for a wide range of wildlife species.

These factors represent the important physical and resource attributes of the Niagara Region which should be taken into account in future development.

CHAPTER VII

POTENTIAL CENTRES OF OPPORTUNITY

The Growth Centre Concept

Because southwestern Ontario is rapidly becoming urbanized, it is expected that a substantial number of problems and their solutions will lie within urban areas. A central place is an urban centre that provides essential services for the people who live within its sphere of influence. A growth centre is an urban centre capable of either spontaneous growth, both of population, economic activity and income level together, or of potential growth. A very important feature of a growth centre or centre of opportunity is that the benefits of its growth are likely to be felt in the area surrounding it. The advantages which the development of growth centres provides include maximum utilization of investment, improvement in the range of services available to people and industry, exploitation of external economies, the diversification of economic activity, and a greater capacity to withstand the effects of future structural changes and cyclical downswings. The continuing interaction of these factors is likely to provide better job opportunities for labour, and a large and diverse labour market for industry.

Criteria for Selection of Centres of Opportunity

Five major considerations are essential in an examination of possible centres of opportunity in the Niagara Region. The first involves the population of each centre and its associated urban area. A second is the past rate of growth, particularly of the centre but also of the adjacent area. A third is the present inter-industry mix within the centre, and the anticipated future trends in this mix. The fourth is concerned with the infrastructure required for this potential growth - sewage facilities, water supply, energy supply, transportation access, and educational facilities. The fifth involves transportation and communication linkages among centres of opportunity.

Potential centres of opportunity will be chosen with careful regard to (1) the functions they will be expected to carry out in their respective performance areas and (2) a provincial policy of "nodalized decentralization". Areas of high performance obviously do not need measures to stimulate growth. There, major development problems are associated with space adjustment and conservation of both human and natural resources.

Potential centres of opportunity are of three types involving, for the entire Province, a three-tiered hierarchy: primate, linked and strategic centres. In areas of the Niagara Region where growth is above the provincial average, primate and

linked centres may be used to channel growth. Linked centres are those located outside effective journey-to-work zones of primate centres, but functionally are tied, in whole or in part, to primate centres. Linked centres have their own journey-to-work zones.

There are two major benefits of applying the principle of nodalized decentralization: (1) current urban problems can be alleviated, and (2) the foundation can be laid for carefully planned, larger urbanized areas of the future.

The principle of nodalized decentralization also can be applied to areas of the Niagara Region where growth is at or below the provincial average. Where dynamic primate centres are close by, this application mainly will take the form of linked centres, as described above. Where primate centres are neither near nor dynamic, stimulation may be necessary. Primate centres offer the best opportunities to stimulate growth in lagging areas.

Although primate and linked centres can provide employment and living accommodation for most of Ontario's rapidly urbanizing population, they will not fulfill completely the objective of encouraging each region to reach its socio-economic potential, nor will they fulfill completely the objective of enhancing the quality of life in each region. A third level of centre is needed. This is the strategic growth centre which is not linked predominantly to any metropolitan area, but which provides employment

opportunities for people who otherwise might not find work easily. All in all, the total pattern of centres of opportunity and their journey-to-work zones should comprise a geographical mosaic which can offer employment opportunities to essentially all urban and rural people in the Niagara Region and the Province of Ontario.

The possible centres of opportunity in the Niagara Region are listed on Table 7.1. These are the 29 incorporated urban centres in the Region that had populations of over 750 people in 1966. Selected criteria for evaluating their past and present performance are also listed. With the exception of the classification into functional types, each centre is assigned to one of five classes (with class 1 representing the highest, and class 5 the lowest performance) for each of the criteria listed. For example, Brantford's accessibility is excellent (class 1), while Port Rowan's is poor (class 5). Thus it is possible to compare the growth potential of one urban centre with another according to any or all of the selected measures listed. It should be noted that the classification system on the table is derived from the performance of incorporated urban centres in Ontario, and the deviation of this performance from the provincial norm. The classification systems can therefore be applied to the urban centres in any region in the Province.

TABLE 7.1

SELECTED MEASURES OF URBAN GROWTH POTENTIAL, NIAGARA REGION

SELECTED MEASURES		URBAN CENTRES																								
		Beamsville	Brantford	Burlington	Caledonia	Cayuga	Chippawa	Crystal Beach	Dundas	Dunville	Fonthill	Fort Erie	Grimby	Hagersville	Hamilton	Jarvis	Niagara Falls	Niagara-on-the-Lake	Port Colborne	Port Dover	St. Catharines	Stimcoe	Thorold	Waterdown	Waterford	Welland
Functional Type of Centre, 1969		6	4	4	6	6	6	6	5	5	6	5	5	6	3	6	4	6	5	5	6	3	5	5	6	4
Trade Area Size, 1969		5	1	3	4	5	5	5	4	5	5	4	1	5	4	5	4	5	4	5	5	1	2	4	5	4
Trade Area Population, 1966		4	2	1	4	5	3	4	5	1	5	2	5	4	1	4	1	3	3	2	4	5	1	3	1	4
Wholesale Sales, 1961		-	3	3	-	-	-	-	-	4	4	-	4	-	1	-	3	-	4	4	-	-	3	4	4	-
Manufacturing Employment 1968		5	2	2	5	-	-	-	5	4	4	-	3	5	-	1	-	2	5	4	3	5	-	1	3	5
Provincial and Federal Government Services, 1969		5	2	3	5	3	5	5	5	5	4	5	3	5	5	1	5	3	3	5	4	5	5	1	2	5
Population Growth of Centre, % Change 1961 to 1969		1	3	1	1	2	1	4	3	2	4	2	3	1	3	3	2	1	2	3	2	3	3	2	2	4
Retail Sales % Change 1961 to 1966		3	3	3	1	-	1	4	4	4	3	3	3	2	3	3	-	2	4	4	4	5	-	2	4	5
Manufacturing Employment % Change 1961 to 1968		3	3	1	-	-	-	-	4	4	-	1	3	-	4	-	2	1	4	-	5	-	3	3	1	5
Growth Prospects of the Economic Base, 1969		4	2	1	3	3	3	5	4	4	3	4	3	4	3	1	3	2	4	4	3	2	5	1	1	2
Accessibility of Centre, 1969		4	1	1	3	3	4	4	4	1	4	2	4	3	2	1	3	2	5	1	2	4	5	2	3	1
Cultural and Recreational Facilities, 1969		5	2	3	5	5	5	5	4	5	5	3	3	5	2	5	2	4	4	4	4	4	2	4	4	5
Water and Sewer Spare Capacity, 1968-69		4	3	1	3	5	3	3	3	3	5	3	5	3	3	4	4	3	4	3	2	5	2	4	2	4
Availability of Industrial Sites, 1969 and 1970		2	1	1	3	4	3	3	1	4	4	4	3	4	5	3	2	1	4	4	1	4	4	1	1	5
Summary of Evaluation Criteria for Centres of Opportunity		4	2	1	3	4	3	5	5	4	5	4	3	4	4	1	3	2	4	4	2	3	5	1	2	3

Note: Dashes refer to centre where data are not available or applicable.

Function of Centres

Hierarchy of Centres It has been demonstrated by Dr. R.S. Thoman and Professor M.H. Yeates in Delimitation of Development Regions in Canada¹ and by Professor H. Carol in Geographic Identification of Regional Growth Centres and Development Regions in Southern Ontario,² as well as by other authors, that a hierarchy of central places does exist in Ontario. A central place is an urban centre that provides essential services for the people who live within its sphere of influence. Large urban centres, technically known as central places of high order, provide specialized functions for neighbouring centres of lower order. Within the sphere of influence of a high order centre, such as Hamilton, there will typically be several smaller centres providing local goods and services, and having much smaller spheres of influence.

The range of services provided by an urban centre is indicated by the number of different types of functions present rather than by the number of establishments. Urban centres

¹Richard S. Thoman and Maurice H. Yeates, Delimitation of Development Regions in Canada, Dept. of Geography, Queen's University, 1966.

²Hans Carol, Geographic Identification of Regional Growth Centres and Development Regions in Southern Ontario, Dept. of Geography, York University, Toronto, 1966.

cluster into distinct functional levels that make up the urban hierarchy. Each higher order centre performs all the functions that the lower orders perform, with additional specialized functions of its own. Thus the functions performed by an urban centre can be used to identify its place in the Niagara Region's urban hierarchy. The urban centres in Ontario have been classified on this basis into the following levels:

- Type 1 - Megalopolitan Centre
- Type 2 - Supra-Regional Centre
- Type 3 - Regional Centre
- Type 4 - Sub-Regional Centre
- Type 5 - Full Convenience Centre
- Type 6 - Minimum Convenience Centre

The functional hierarchy for the Niagara Region is shown in the following table and on Figure 19. It will be noted that centres of types 1 and 2 are not present in the Region.

Toronto is the only megalopolitan centre in Ontario because it dominates the entire Province. There are two supra-regional centres, Ottawa and London, which are in the Eastern Ontario and Lake Erie Regions respectively.

TABLE 7.2

FUNCTIONAL HIERARCHY, NIAGARA REGION, 1970

<u>Functional Type</u>	<u>Urban Centres</u>	<u>1968 Range of Population</u>
1. Megalopolitan Centre	-	Above 500,000
2. Supra-Regional Centre	-	250,000 to 500,000
3. Regional Centre	Hamilton, St. Catharines	100,000 to 300,000
4. Sub-Regional Centre	Burlington, Brantford, Niagara Falls, Welland	35,000 to 80,000
5. Full Convenience Centre	Port Colborne, Dundas, Simcoe, Fort Erie, Thorold, Stoney Creek, Grimsby, Paris, Dunnville	5,000 to 20,000
6. Minimum Convenience Centre	Beamsville, Chippawa, Delhi, Port Dover, Niagara, Fonthill, Caledonia, Waterford, Hagersville, Waterdown, Crystal Beach, Cayuga, Jarvis, Port Rowan	800 to 4,000

Minimum Convenience Centres provide functions such as general stores, banks, service stations and elementary schools. Full Convenience Centres, as the name suggests provide a complete range of local services, including secondary schools, drug stores, lawyers and real estate agencies. Sub-Regional Centres contain such specialized functions as district hospitals, daily newspapers, provincial courts etc. Finally, the Regional Centres provide such services as universities and specialized wholesaling. A summary of the functional type of each centre can be found in Table 7.1

Trade Area Size and Trade Area Population The sphere of influence of an urban centre as represented by its trade area is the area surrounding the centre to which it provides essential services. People living within the sphere of influence of an urban centre travel to that centre to work, shop, spend their leisure time, etc. The size of trade areas and their population in 1968 are summarized on Table 7.1 using a five-fold classification. Because urban centres of high order typically have much larger trade areas than those of lower order, Table 7.1 shows a close correlation between a centre's functional type, and both its trade area population and trade area size.

It is generally recognized that the journey-to-work is one of the most important criteria for defining the sphere of influence of an urban centre. Dr. R.S. Thoman and Professor M.H.

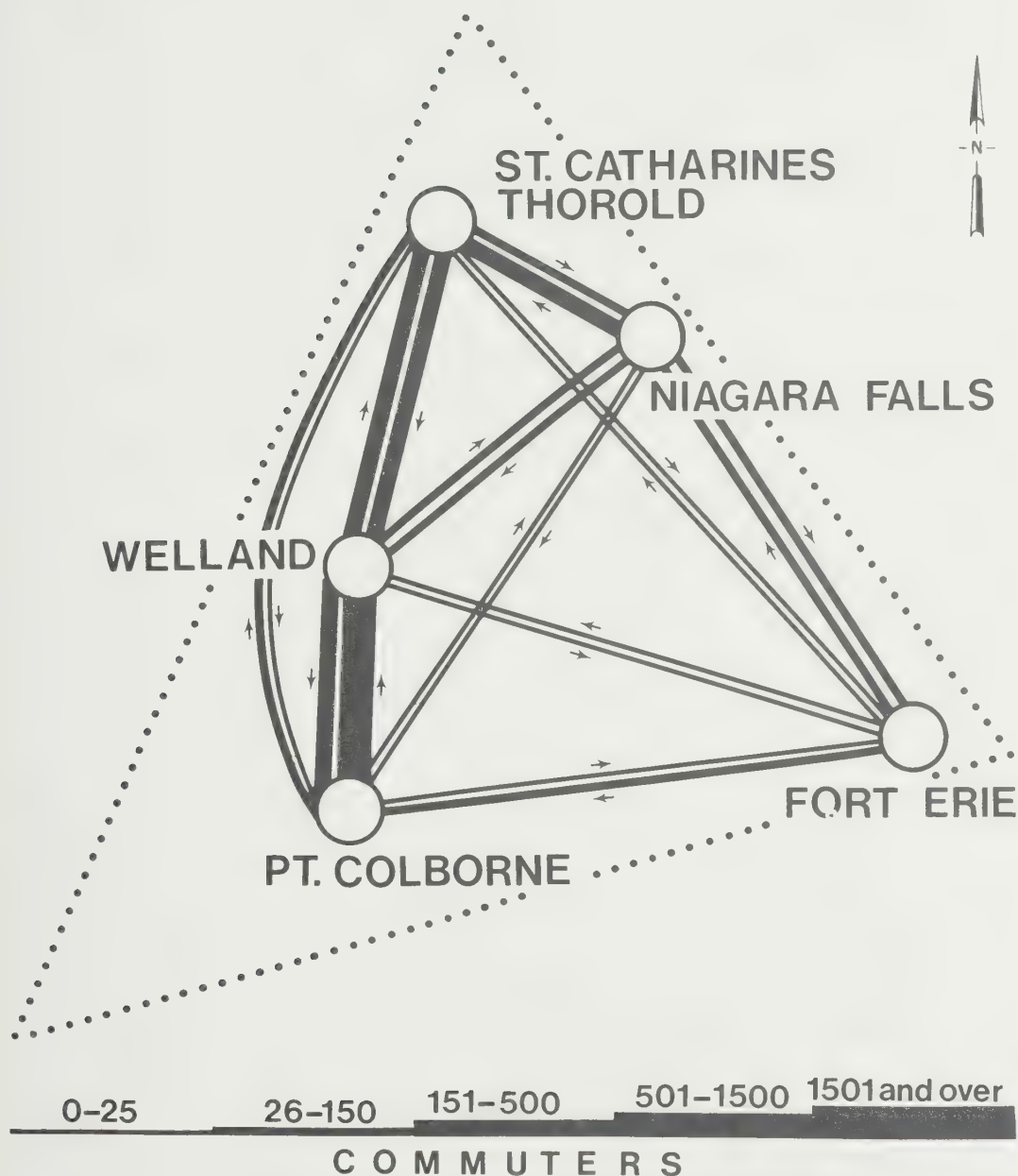
Yeates point out in the study entitled Delimitation of Development Regions in Canada³ that the journey-to-work pattern shows the day-to-day influence exerted by a centre of employment upon a surrounding area and as such it is a fundamental criterion in delimiting regions for the purpose of alleviating economic stress. The effects of creating employment in a centre can only extend as far as its sphere of influence. The journey-to-work pattern will therefore be a particularly important variable to consider in the development of policies in Norfolk and Haldimand.

Figure 18 shows the journey-to-work pattern for the major centres in the Region.⁴ It may be observed that the centres' spheres of influence are not mutually exclusive, but rather they overlap one another. The amount of overlap is dependent on the range of employment opportunities offered in each centre, the

³Op. cit.

⁴The data for journey-to-work patterns were obtained from a sample survey of the major manufacturers in urban centres of 5,000 population and over. These manufacturing firms provided a complete enumeration of the locations of their employees' places of residence. Because of the variation in the size of the firms interviewed, the percentage of the total employment covered in each centre also varied. In order to achieve comparability, expansion factors were applied to each of the sample flows from the employees' origins to their work destinations to obtain 100 per cent enumeration. The resulting flows were then plotted on a map to show the broad spheres of influence, or labour catchment areas, of each centre. Where it was impossible to plot precisely the location of employees who had rural route addresses, they were aggregated with commuters from the nearest urban centre.

INTER-URBAN JOURNEY TO WORK ST. CATHARINES-PT. COLBORNE- NIAGARA FALLS TRIANGLE



hierarchy. Volume of wholesale sales is important in demarcating the higher order centres, since as pointed out in Chapter IV, wholesaling is concentrated in large urban centres. Table 7.1 shows that Hamilton is the dominant centre in the Niagara Region in wholesale trade. Brantford, Burlington, Niagara Falls and St. Catharines make up the next group of wholesaling centres. Although St. Catharines according to this indicator is a Sub-Regional Centre, it is in fact a Regional Centre because it dominates the eastern section of the Niagara Region in other high order functions. Welland and Thorold rank low in terms of volume of wholesale trade due to the proximity of St. Catharines and Niagara Falls.

Manufacturing Employment The classification of manufacturing employment in 1964 in Table 7.1 reflects the importance of manufacturing in the economic base of these urban areas. The centres with the largest concentrations of manufacturing employment are also those highest up on the functional hierarchy, Hamilton, St. Catharines and Brantford at level 1, and Niagara Falls and Welland at level 2. Burlington scores lower than might be expected in this criterion, because a large proportion of its residents work in manufacturing establishments in Hamilton.

Government Services Data for this section were provided by the Provincial and Federal Departments of Public Works (Real

NIAGARA (SOUTH ONTARIO) DEVELOPMENT REGION LOCATION OF GOVERNMENT SERVICES



manufacturers in the eastern portion of the Niagara Region, irrespective of location in a particular community, share a common labour market area.

While a few individuals may commute daily for more than 50 miles, the journey-to-work distance for the majority is considerably less. Table 7.3 shows the average commuting distance to each destination centre. Each destination centre was assumed to extend for a radius of five miles from its centre to include employees who have rural route addresses relating to that centre. Thus, the commuting distances apply only to workers who live beyond this five mile radius. The range of average commuting distances to work varies from about nine to 14 miles, though for most centres it is from 10 to 11 miles.⁷

Graphs showing the cumulative percentage frequency distribution of employees by distance from each major urban centre were drawn to present the range over which a centre was dependent for its labour force. An arbitrary figure of 90 per cent of total employees in each centre was selected to represent the area over

⁷It should be noted that these are straight line distances and as such they are underestimates of the length of journey-to-work.

TABLE 7.3

AVERAGE COMMUTING DISTANCE IN MILES FOR EMPLOYEES LIVING MORE THAN FIVE
MILES FROM CENTRE OF SELECTED MUNICIPALITIES, 1969

<u>Destination</u>	<u>Distance</u> (Miles)
Hamilton	11.1
St. Catharines/Thorold	10.9
Burlington	10.6
Brantford	13.9
Niagara Falls	11.0
Welland	10.4
Port Colborne	10.5
Simcoe	9.0
Fort Erie	10.0
Grimsby	10.7
Paris	8.8
Dunnville	10.5

Source: Regional Development Branch, Field Work, 1969 and 1970.

which a centre attracted most of its workers (Table 7.4). All the selected centres with the exceptions of Brantford, Dunnville and Grimsby, attract 90 per cent of their labour force from within a ten mile radius. The longer distances over which the excepted cities depend reflect the more rural distribution of the population in their hinterland.

In conclusion, Hamilton is the dominant centre with a sphere of influence which extends almost throughout the Niagara Region. Brantford is the major centre in the western portion of the Region. Although there is a considerable degree of overlap in the spheres of influence of the centres in the eastern part of the Region, St. Catharines tends to be the major centre. It has the widest sphere of influence reflecting the greater range of employment opportunities. Journey-to-work zones on average extend for a radius of 15 to 20 miles from the central city, although generally the larger the city the greater is its sphere of influence. However, the area over which a centre dominates tends to be much smaller in size, usually not more than 10 miles in radius. This pattern is reflected on Figure 18 which shows the rapid fall-off in the intensity of movements near the centre and a slower rate of fall-off towards its limits of influence.

Wholesale Sales The wholesale sales of an urban centre is one indicator of the place it holds in the Region's urban

TABLE 7.4

AVERAGE COMMUTING DISTANCE IN MILES FOR NINETY PER CENT OF
EMPLOYEES, BY SELECTED MUNICIPALITIES, 1969

<u>Destination</u>	<u>Distance</u> (Miles)
Hamilton	9.6
St. Catharines/Thorold	7.9
Burlington	9.4
Brantford	14.3
Niagara Falls	7.7
Welland	8.1
Port Colborne	8.5
Simcoe	9.0
Fort Erie	8.3
Grimsby	11.2
Paris	6.8
Dunnville	14.5

Source: Regional Development Branch, Field Work, 1969 and 1970.

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Government Services Data for this section were provided by the Provincial and Federal Departments of Public Works (Real

NIAGARA (SOUTH ONTARIO) DEVELOPMENT REGION LOCATION OF GOVERNMENT SERVICES



GOVERNMENT SERVICES

MAP CODES

PROVINCIAL

A AGRICULTURE & FOOD	K LABOUR
B HEALTH	L LANDS & FORESTS
C CORRECTIONAL SERVICES	M MUNICIPAL AFFAIRS
D TRADE & DEVELOPMENT	N MINES
E EDUCATION	O TREASURY & ECONOMICS
F FINANCIAL & COMMERCIAL AFFAIRS	P PUBLIC WORKS
G PROVINCIAL SECRETARY & CITIZENSHIP	Q REVENUE
H HIGHWAYS	R ENERGY & RESOURCES MANAGEMENT
I TOURISM & INFORMATION	S SOCIAL & FAMILY SERVICES
J JUSTICE & ATTORNEY - GENERAL	T TRANSPORT
	U UNIVERSITY AFFAIRS

FEDERAL

a AGRICULTURE	n POSTMASTER-GENERAL & COMMUNICATIONS
b NATIONAL HEALTH & WELFARE	o TREASURY
c EXTERNAL AFFAIRS	p PUBLIC WORKS
d INDUSTRY, TRADE & COMMERCE	q REVENUE
e SUPPLY & SERVICES	r ENERGY, MINES & RESOURCES
f FINANCE	s NATIONAL DEFENSE
g SECRETARY OF STATE	t TRANSPORT
h REGIONAL ECONOMIC EXPANSION	u UNEMPLOYMENT INSURANCE COMMISSION
i INDIAN AFFAIRS & NORTHERN DEVELOPMENT	v VETERANS' AFFAIRS
j JUSTICE & SOLICITOR - GENERAL	w CONSUMER & CORPORATE AFFAIRS
k LABOUR	x CANADIAN BROADCASTING CORPORATION
l FISHERIES & FORESTRY	y CENTRAL MORTGAGE & HOUSING CORPORATION
m MANPOWER & IMMIGRATION	

Property Inventory) and by the Provincial Department of Justice, based on an 80 per cent sample of all holdings, (see Figure 20). An index was developed by looking both at the spatial area served and at the degree of intensity with which services are used by the public at the sub-regional, regional, provincial and federal levels, (see Appendix 6). A five-fold intensity rating was developed for the centres where services are provided, and each centre classified as shown in Table 7.1.

Both Regional Centres, Hamilton and St. Catharines, have the most intensive degree of both provision and use of these services. Simcoe, a Full Convenience Centre, also performs a high order function with respect to these services, due to its relative isolation from other higher order centres.

At the sub-regional level, Brantford functions at level 2 as would be expected from its position in the urban hierarchy. Burlington, Niagara Falls and Welland are level 3 rather than level 2 centres because of the dominance and proximity of Hamilton and St. Catharines.

At the level of Full Convenience Centres, it will be observed that urban centres near the higher order centres of Hamilton, St. Catharines and Brantford have fewer service functions than would be expected from their position in the functional hierarchy.

This is particularly true of Paris, which is dominated by Brantford, Thorold, which is dominated by St. Catharines, and Dundas, Grimsby and Stoney Creek, which are dominated by Hamilton. Grimsby may be expected to perform more of these functions in future both because of its location and its increasing significance in the functional hierarchy.

Minimum Convenience Centres all function at level 5 except in the cases of Cayuga and Niagara-on-the-Lake. Cayuga is a level 3 centre with respect to services because it is the headquarters for many of the Provincial Government services in Haldimand County, such as the County Court, Registry Office and Jail. Niagara-on-the-Lake is a level 3 centre because of the range of Federal Government offices located there and in the immediate vicinity.

Growth Trends of Centres

Population Population growth is a good indicator of an urban centre's past economic performance. It can also indicate which urban places are becoming overspill or dormitory centres for people working elsewhere. Assuming that present trends continue unaltered, rates of population growth can suggest which of a region's centres will experience slow, intermediate or fast growth in the future.

It is apparent from Table 7.1 that six urban centres in the Niagara Region have had particularly high growth rates during the 1961-1968 period. Niagara Falls and Chippawa are located in the St. Catharines-Port Colborne-Niagara Falls triangle in the eastern section of the Region; Grimsby, Beamsville and Burlington form part of the Hamilton-Burlington-St. Catharines Corridor; Caledonia is located to the south of Hamilton. The growth of all these centres with the exception of Niagara Falls is no doubt partly attributable to the fact that they fall within the labour-sheds of Hamilton, St. Catharines or Niagara Falls. This is particularly true in the case of Chippawa and Caledonia.

Centres of slow growth have been Crystal Beach and Dunnville. Thorold has also experienced a slow rate of growth, possibly because of its proximity to St. Catharines.

Retail Sales Also summarized on Table 7.1 is the growth in retail sales for each centre from 1961 to 1966. This criterion measures the degree to which the centre concerned functions as a service centre, and whether its importance as a service centre has increased over the time period. It therefore indicates changes in the functional hierarchy.

Of the two Regional Centres, Hamilton has maintained its position as a Service Centre, while St. Catharines has increased

its relative status. Of the four Sub-Regional Centres, Niagara Falls has shown an increase in relative importance, while the status of Burlington, Brantford and Welland has remained constant.

The majority of Full Convenience Centres have shown low rates of increase in retail sales from 1961 to 1966. Stoney Creek has shown a particularly marked decline in importance, no doubt due to the proximity and increasing dominance of Hamilton. A slight decline has been experienced by Port Colborne, Dundas, Simcoe, Thorold and Paris, while Fort Erie and Dunnville have remained constant. Grimsby has become more important as a service centre, reflecting the increasing urbanization in the Hamilton-Burlington-St. Catharines Corridor.

Of the Minimum Convenience Centres, three have improved their position over the period 1961-1966. Caledonia and Waterdown have increased in importance due to the stimulation of Hamilton, and the fact that they act as dormitory centres for many of Hamilton's workers. Chippawa, which has a similar relationship with Niagara Falls, has also increased in importance as a service centre. Four of the Minimum Convenience Centres, Port Dover in particular, have shown substantial declines.

When the geographical distribution of these changes is examined, a significant pattern emerges. St. Catharines and

Niagara Falls are increasing their dominance over the eastern sections of the Niagara Region at the expense of Niagara-on-the-Lake, Thorold, Port Colborne and Crystal Beach. Grimsby is increasing its dominance of the central section of the Hamilton-Burlington-St. Catharines Corridor. Although the status of Hamilton and Burlington has remained constant, there is evidence that proximity to such high order centres has caused a decline in the relative position of Dundas and Stoney Creek. Similarly, the status of Brantford has remained constant, but its local dominance over Paris has increased. The centres in the southwestern part of the Niagara Region have declined in importance as the major urban centres of the northern and western parts of the Region have increased their dominance. A change in the status of urban centres in Norfolk and Haldimand counties will no doubt result from the establishment of the Nanticoke industrial complex.

Manufacturing Employment The growth in manufacturing employment as compared with the provincial norm, measures which centres are becoming more important and which less, assuming that industries have not become more capital-intensive. In the Niagara Region, there has been very little correlation between growth in manufacturing and changes in the functional hierarchy.

The centres with the fastest rates of growth between 1961 and 1968 were Burlington, Fort Erie, Niagara-on-the-Lake and

Stoney Creek. In the case of Niagara-on-the-Lake and Stoney Creek the absolute increases were very small, less than 200 employees. The increase in manufacturing employment in Burlington was very significant, from approximately 2,300 people in 1961 to 5,000 in 1968.

Prospects of the Economic Base The analysis of the inter-industry mix is based upon 1968 data and the same geographical subdivisions as the analysis of manufacturing in Chapter IV, Wentworth County, Lincoln and Welland counties, Brant County, and Haldimand and Norfolk counties. The growth potential of the inter-industry mix depends upon how large a share it has of the growth industries of both the Niagara Region and the Province of Ontario.

In Wentworth County, Hamilton and Burlington have the best prospects for industrial growth. In Hamilton, the basic industries are the rubber, clothing, printing, publishing and allied, primary metals, machinery, petroleum and coal products and electrical products groups, of which the electrical products and machinery groups are provincial fast growth industries. The primary metals industries have excellent growth prospects as a result of locational advantages in the Niagara Region. Burlington has a greater preponderance of slow growth industries than Hamilton, including chemicals, leather and paper manufacturers. The main growth industry here is metal fabricating. In Dundas the main concentrations of employment are in the furniture and fixtures and

knitting groups. The former is a fast growth industry in both the Region and the Province, while the latter is a problem industry in Ontario, as indicated in Chapter IV. Stoney Creek, however, has good prospects for growth due to the concentration in electrical products and metal fabricating.

In Lincoln and Welland counties, the best growth prospects are in St. Catharines, with its transportation equipment and metal fabricating plants. The industry that mitigates against growth in this centre is knitting. The basic industries in Niagara Falls are food and beverages, leather, furniture and fixtures, electrical products, non-metallic minerals and chemicals. Food and beverages, leather and chemicals have been slow growth industries in both the Region and the Province suggesting that the inter-industry mix in Niagara Falls is working against the economic vitality of the manufacturing sector. In Thorold and Thorold Township the industry mix has also been rather unfavourable. The concentration of employment in the slow growth paper and allied and non-metallic minerals industry groups outweighs the employment in the fast growth metal fabricating industry. The basic industries in Port Colborne are food and beverages, primary metals and leather, of which the best growth prospects are in the primary metals. Welland is one of the major urban centres in this sub-region with concentrations of employment in primary metals, rubber and textiles.

As in the case of Port Colborne, the best prospects for regional growth will be derived from the primary metals. Grimsby's inter-industry mix is the least encouraging at present. The basic industries are wood and furniture and fixtures in which there are very heavy concentrations of employment. Other basic industries are the food and beverages, paper, printing and metal fabricating groups. The best prospects for the generation of regional growth are in the metal fabricating and furniture and fixtures industries.

Brant County is the third sub-region in the Niagara Region. Employment in Brantford is widely distributed through the industrial sector. There is a wide range of basic industries, with good growth prospects in the machinery and electrical products groups. The problem industry groups, as mentioned in Chapter IV, are textiles, knitting and clothing which are experiencing severe economic stress. The problem in Paris is very similar but the concentration of employment in knitting is much greater. It is Paris' major industry. Printing, machinery and chemicals constitute the other basic industries.

Haldimand and Norfolk have a much less well-developed industrial sector than the other sub-regions. The basic industries in Simcoe are food and beverages, tobacco, electrical products, leather, printing, wood and metal fabricating. The groups that have the best growth prospects and that will benefit most from

the industrial complex at Nanticoke are food and beverages, electrical products and metal fabricating. It is expected that leather and knitting industries will experience labour problems when high wage manufacturers move into the area. Dunnville has a much less well-developed manufacturing sector than Simcoe. The basic industries here are textiles, food and beverages and transportation equipment. The latter industries have good future growth prospects, but the textile industry is likely to experience problems.

Infrastructure of Centres

Accessibility The purpose of this measure is to derive some generalized accessibility score to determine the ease with which communities can contact each other. Implicit in this is the fact that accessibility will influence the location of new and improved functions in urban centres. This measure therefore places great importance upon existing transportation services. The scores on Table 7.1 are based upon each centre's proximity to the four facilities, road, rail, air and water. The fact that a large number of centres have scores of 1 and 2 is a very favourable indicator of the Niagara Region's growth potential.

Cultural and Recreational Facilities Table 7.2 summarizes the cultural and recreational facilities available in the urban

centres listed. The centres with the widest range of facilities and the easiest access to recreation and cultural facilities outside the immediate urban area are Brantford, Hamilton, Niagara Falls, Niagara-on-the-Lake and St. Catharines. Centres of rank 3 are Burlington, Fort Erie and Grimsby which benefit from accessibility to facilities in other urban centres and recreation areas. The other centres in the Region have scores of 4 or 5 because most of them are too small to support a wide range of amenities. Centres in the southwestern parts of the Region have poorly developed cultural infrastructures, and are too far from other major centres to benefit from their facilities.

Water and Sewer Capacity The urban centres have not been ranked according to the efficiency of their water supply and sewage treatment systems. Those centres with rankings of either 1 or 2 are considered to be satisfactory while all others have serious problems. All centres lacking secondary sewage treatment facilities automatically are ranked 2 or lower. Those centres ranked 4 or 5 have water or sewage systems which require immediate improvement.

Water Supply The sources of water supply in the Niagara Region are: private and public wells, Lake Erie and Lake Ontario, the Grand River, the Niagara River and the Welland Canal. Ground water supplies (wells) are the only ones which do not always require

MUNICIPAL WATER AND SEWAGE SYSTEMS, MUNICIPALITIES OF 5,000 AND OVER, NIAGARA REGION, 1969

Municipality	1968 Population (1)	Source Of Water Supply (2)	Adequacy Of Water Supply (3)		Ranking Of Water Supply (4)	Stream Receiving Sewage (5)	Type Of Treatment (6)	Adequacy Of Sewage Treatment Facilities (7)		Ranking Of Sewage System (8)		Combined Ranking (9)
Hamilton Includes Saltfleet Stoney Creek	291,187 18,228 7,572	Lake Ontario Private Wells City of Hamilton	Adequate Adequate Adequate		2	Burlington Bay	Primary None Secondary	Inadequate (1966) Adequate (1966) Inadequate (1966)		3		3
Dundas	15,868	City of Hamilton	Adequate				Secondary	At capacity (1966) By 1971 secondary treatment to be expanded from present 2/3 cap- acity. Inadequate combined sewers in old part of Hamilton				
St. Catharines Includes Thorold	100,799 8,842	Lake Erie Via Welland Canal	No problems Almost at capacity		2	Twelve Mile Creek & Welland Canal	Primary	Expansion in progress, 6,000 people not connected. Adequate		2		2
Burlington	75,930	Lake Ontario	Adequate		1	Burlington Bay	Secondary	Adequate. Recent addition made		1		1
Brantford	60,140	Niagara River	Possibility of getting water from Great Lakes, or should expand existing facilities		2	Storm sewers - Grand River and Fairchild's Creek Sanitary sewers - Grand River	Secondary	Adequate but industrial wastes problem in Grand River. Some septic tanks. Suburban area may develop waste water disposal problems. Separation of storm and sanitary sewers is to be continued.		3		3
Niagara Falls	56,851	Niagara River	Adequate but all sections need up- dating. Need additional filtration capacity. All parts need updating. Short supply in summer		3	Niagara River Chippawa River	Primary	Population not served use an ineffective settling tank 65% area in sewers (1966) expect 100% by 1974. New pumps for ineffective settling tanks. Inadequate		4		4
Welland	40,315	Lake Erie via Welland Canal	No problems. Will need additional storage and increased filtration capacity		2	Welland Canal	Primary	Inadequate. Need secondary treatment. Need improved storm sewers		3		3
Port Colborne	18,168	Lake Erie via Welland Canal	Adequate. Need to improve and enlarge treatment facilities. Need additional storage. Need to replace undersized mains		3	Welland Canal	Secondary	Adequate but problems. Problems with septic tanks. Must complete sewering. Must extend treatment plants		4		4
Simcoe	10,138	Artesian Wells	No problems. Modern system		1	Lynn River	Primary and Secondary	Flow exceeds capacity 25% of the time		4		4
Fort Erie	9,688	Niagara River	Turbidity. Need to improve treatment and distribution		3	Niagara River	Primary	Adequate. Need to connect all residences to sewers		2		3
Grimsby	6,773	Lake Ontario	No problems		1	Forty Mile Creek	Secondary	Overloaded for past 10 years. Applied O.W.R.C. for new sewage treatment plant		5		5
Paris	6,428	Spring and Deep Wells	Need additional ground water supply. System old and near capacity		3	Grand River	Secondary	Only 25% residences connected to the sewerage system. System should be extended to serve areas contributing pollution to the Grand and Nith rivers		4		4
Dunnville	5,279	Lake Erie via pipeline from plant near Port Maitland	Turbid in spring. Treatment plant is overloaded and old		3	Grand River	None	New plant designed (secondary treatment). Approved March 1969, to be completed July 1970		5		3

Source: Regional Development Branch, Field Work, 1969.

TABLE 7.6

MUNICIPAL WATER AND SEWAGE SYSTEMS, MUNICIPALITIES BETWEEN 800 AND 5,000, NIAGARA REGION, 1969

Municipality	1968 Population (1)	Source Of Water Supply (2)	Adequacy Of Water Supply (3)	Ranking Of Water Supply (4)	Stream Receiving Sewage (5)	Type Of Treatment (6)	Adequacy Of Sewage Treatment Facilities (7)	Ranking Of	
								Sewage System (8)	Combined Ranking (9)
Beamsville	4,047	Lake Ontario	No problems	1	Lake Ontario	Primary	Inadequate	4	4
Chippawa	4,219	City Of Niagara Falls	Improvements in distribution are required, No problems	2	Welland River	Secondary	Adequate	1	2
Delhi	3,696	Big Creek	Need improved supply for peak demands and emergencies, Water is satisfactory	3	Big Creek	n.a.	Pollution caused by faulty storm sewers	3	3
Port Dover	3,288	Lake Erie and Springs	Adequate	1	Lake Erie	Primary	Large reserve capacity. May require improved treatment in future	2	2
Niagara-on-the-Lake	3,088	Niagara River	Adequate	1	Lake Ontario	Primary	Inadequate	4	4
Fonthill	2,937	Two Wells	Adequate, Program to locate additional supplies	2	Septic Tanks	None	Inadequate, Need sanitary sewers and sewage treatment facilities	5	5
Caledonia	2,944	Wells	Poor quality, Inadequate for much further growth	3	Grand River	Secondary	Plant is being expanded	2	3
Waterford	2,460	Wells	Adequate	1	Nanticoke Creek	Stabilization Pond	Sewage treatment facility is overloaded. Report coming on enlargement	5	5
Hagersville	2,222	Lake Erie	Water quality poor Quantity adequate	3	Ditch to a branch of Nanticoke Creek	Secondary	Underloaded but receiving stream limitations to further extension. Digester under construction	2	3
Waterdown	2,143	Wells	n.a.	n.a.	Lake Ontario	Secondary	Adequate	1	n.a.
Crystal Beach	2,037	Lake Erie	Adequate, For future will require expansion of filtration capacity	2	Lake Erie	Secondary	Inadequate, Require improved sewage treatment works for summer peak	4	4
Cayuga	1,039	Grand River	Would prefer a better source Adequate	3	Grand River	None	Final design authorized for oxidation ditch to discharge to the Grand River	5	5
Jarvis	861	Lake Erie	Pipeline and pumping can be expanded, Must improve treatment if the system is to be used over the long term	3	Sandusk Creek	2-Cell Stabilization Pond, 14 acres	Receiving stream limitations to plant extension beyond 18 acres	4	4
Port Rowan	841	Lake Erie	Adequate	1	Inner Bay Lake Erie	None	Need municipal sewage treatment facilities, Industry must provide its own, 21 acre waste stabilization pond for October, 1971, Not approved yet	5	5

n.a. Not available.

Source: Regional Development Branch, Field Work, 1969.

treatment although an inadequate septic tank system can pollute these. All other supply sources require purification to some extent. Only a few areas have problems with their water supplies and these seem predominantly minor and seasonal.

- a. The quality of the water is a problem at Dunnville, Fort Erie and Jarvis where the water is turbid, and at Hagersville, Caledonia and Cayuga where the water is very hard.
- b. The supply of water needs to be increased and the waterworks updated at Niagara Falls, Port Colborne, Paris and Brantford since they are operating at capacity.
- c. The distribution of water is a problem at Fort Erie and Chippawa.

The Ontario Water Resources Commission is planning to construct a water pipeline from Lake Erie near Nanticoke to serve Brantford. If take-offs are permitted, this would bring a fairly economical water supply to eastern Norfolk and western Haldimand. However, the problem of sewage disposal would persist and although the Grand River could receive treated sanitary sewage effluent without damaging water quality, storm water run-off would create erosion problems and ecological disturbance to the Grand River. The main restriction on the expansion of urban centres is a lack

of adequate sewage treatment facilities rather than a shortage of water.

Sewage Disposal In 1966, 25 of the Region's 49 municipalities had sewage systems⁸ but only 16 of these covered 50 per cent or more of the municipality's area.⁹ ¹⁰ Although sewers in rural areas are not generally necessary, at least four rural municipalities without sewers have serious waste disposal problems.

All municipalities with sewers have sewage treatment plants of one kind or another, except Dunnville. Dunnville has a sewage treatment plant at present under construction. The majority have only primary treatment facilities which reduce organic pollutants by only 30 per cent. The Ontario Water Resources Commission considers this inadequate and recommends secondary treatment. However, even this is only 95 per cent effective when the system is not overloaded and does not remove all chemical pollution.

A serious lack of sewage treatment facilities exists in Dunnville, Grimsby, Niagara Falls, Port Colborne, Simcoe and Paris.

⁸ Sewerage system includes only the system of sewers.

⁹ Ontario Water Resources Commission, Division of Sanitary Engineering.

¹⁰ Data for Norfolk County were not available.

In Dunnville, raw sewage has in the past been discharged into the Grand River. Grimsby has a secondary treatment plant but it has been overloaded for the past 10 years. Niagara Falls has only a primary treatment plant and in 1966 only 65 per cent of the area of the municipality was on the sewerage system. The population not served by the treatment plant uses an ineffective settling tank which releases effluent into the Chippawa River. All parts of the system need updating. Port Colborne, although it has secondary treatment facilities, is not completely on the sewerage system, and the remaining septic tanks are creating pollution problems. In addition, the treatment plant is inadequate and requires extension. In Simcoe, both primary and secondary treatment plants were completed in 1963. However, flow exceeds the design capacity 25 per cent of the time. The sewerage system in Paris includes only 25 per cent of the residences; in addition, the sewerage collection system should be extended to include areas contributing pollution to the Grand and Nith Rivers. None of the municipalities with populations over 5,000 has a truly adequate sewage treatment system with secondary treatment facilities. Only Fort Erie and St. Catharines (and Thorold) have fairly adequate primary treatment facilities. Other centres have less satisfactory facilities with problems in sewage treatment and discharge.

For the centres with populations between 800 and 5,000,

Chippawa, Waterdown, Caledonia and Hagersville, have tolerable sewage treatment facilities sufficient for their present needs; Delhi and Port Dover have minor problems in their treatment systems; Beamsville, Niagara, Fonthill, Crystal Beach, Jarvis, Cayuga and Port Rowan all have quite unsatisfactory systems. The type of treatment for this group of centres ranges from inefficient secondary treatment to inadequate primary treatment to an oxidation ditch and waste stabilization ponds.

Thus it can be seen that sewage treatment facilities in the Niagara Region are completely inadequate, reflecting the unwillingness of the Region to invest in the necessary facilities. A serious lack of sewage facilities has been cited by the Niagara (South Ontario) Regional Development Council as a major restriction to urban growth for both industrial and residential construction throughout the Region.

Availability of Industrial Sites The potential success of urban centres in attracting new manufacturing plants (and hence increased employment) depends in part upon the availability and the degree of development of new industrial sites. The urban centres in the Niagara Region were therefore ranked according to the criteria stated in Appendix 6 (See Table 7.1). The data upon which this ranking is based were derived from the Ontario Department of Trade and Development Industrial Surveys, and interviews with Industrial

Commissioners in the Niagara Region.

Brantford, Burlington, Delhi, Niagara Falls, Port Colborne, Simcoe, St. Catharines and Welland all have ample land acreage for industry that is owned, zoned and serviced by these municipalities. All except Port Colborne have industrial parks ranging in size from 24 to 500 acres. Brantford, Niagara Falls and Port Colborne each has over 150 acres of land in municipal ownership that are fully serviced and zoned for industrial development. In addition, Niagara Falls, Port Colborne and St. Catharines each has several hundred acres of serviced industrial land that are in private ownership.

Beamsville and Jarvis were given a rating of 2 because they have ample land available that is either zoned but not serviced or serviced but not zoned. A rating of 3 was given to centres having limited land that is owned, zoned and serviced. These centres are Caledonia, Chippawa, Crystal Beach, Fort Erie, Hamilton and Thorold.

Centres with limited land available that is inadequately serviced or zoned are Cayuga, Dundas, Dunnville, Fonthill, Grimsby, Niagara-on-the-Lake, Paris, Port Dover, Port Rowan, Waterdown and Waterford. These centres were assigned a rating of 4. Grimsby in particular has inadequate sewage facilities which are a serious constraint upon industrial expansion.

Centres of rank 5 having no recorded industrial land available at present are Hagersville and Stoney Creek. The physical expansion of Stoney Creek has been limited by its location between the Niagara Escarpment and the Lake Ontario shoreline, and the conflict between industrial and agricultural land uses. Hamilton, as mentioned previously is of rank 3 in terms of land available to industry because it has an industrial park of 70 acres and 110 acres of serviced municipal land. This, however, obscures the fact that within the City of Hamilton there is a tremendous demand for industrial land in a confined site. Much of the pressure for expansion is being felt in Stoney Creek and in areas above the Escarpment.

Summary of Evaluation Criteria for Centres of Opportunity

Based upon consideration of all the indicators on Table 7.1 and upon the preceding chapters in this report, the centres with the greatest growth prospects are Burlington, Hamilton and St. Catharines. The second level of centres in terms of growth potential are Brantford, Niagara Falls, Port Colborne, Simcoe and Welland. Centres in which growth potential is not encouraging are Crystal Beach, Delhi, Dunnville, Port Rowan and Waterford. It should be emphasized that these rankings are preliminary. They summarize the past performance of each centre, and are not intended to imply that a centre's future role will necessarily be the same as that in the past.

CHAPTER VIII

GOALS, NEEDS AND PRIORITIES

Introduction

This report began with a discussion of broad provincial goals for attaining the full social, economic and physical development potential of Ontario's ten development regions. Whether these goals are defined in terms of employment opportunities, social services or environmental protection, they all reflect the search for an enhanced quality of "livability" - a concern shared by all regions in the Province, and indeed by all provinces of Canada.

What does differ from region to region is the nature and severity of the local problems which must be overcome if each region is to attain these goals. While the principal purpose of this phase of the regional development program is to identify the problems and needs of the region, a later phase will be concerned with devising strategies and plans for solving these problems and guiding future development.

As noted in the 1966 White Paper, Design for Development, "Much of Ontario's regional development program will be accomplished by a thorough-going coordination of the programs, policies

and spending of government departments....on a regional basis". One of the prerequisites to effective use of the provincial budget as a mechanism for carrying out regional plans is the classification of all provincial program spending according to the types of problems and needs these programs are designed to serve.

Currently, each provincial department is engaged in a coordinated planning program of defining its own overall departmental goals and problem-solving program objectives. Since the problems with which these provincial programs are concerned all reflect the local needs of one or more regions in Ontario, our regional development plans must ultimately reflect the program objectives being defined by individual departments and their budgetary plans for solving these specific problems.

Rather than duplicate these parallel provincial efforts to define program objectives, this report addresses itself to the equally important task of supplying the essential regional ingredient to what is an overall provincial planning program - that is, providing an assessment of priorities among the major needs of each zone and total area of the Niagara Region. To maintain coordination with program planning and permit inter-regional comparison, potential regional needs have been standardized and classified in accordance with eight broad functional

categories being used for provincial program analysis.

Perhaps in many instances, the priority judgements must be considered preliminary. Major efforts have been made to incorporate the recommendations of other provincial departments. Since the best knowledge of regional needs can often be determined only by those who enjoy a day-to-day contact with local problems and aspirations, extensive use has been made of the South Ontario Economic Development Council's own five-year program recommendations, the reports of the Niagara Regional Advisory Board and the findings of the Haldimand-Norfolk Study.

One of the most important purposes of this report is to provide these latter three organizations with the opportunity to review their assessment of local priorities, and with the participation of local municipalities and private citizens, to assist the Ontario Government in achieving a full appreciation of those regional conditions to which our plans and provincial budget should be directed.

1. Economic Development Priorities

This goal aims at assisting the Niagara Region to attain its full potential for economic development, consistent with the

TABLE 8.1

ECONOMIC DEVELOPMENT PRIORITIES

	Wentworth	Lincoln And Welland	Brant	Haldimand	Norfolk	Niag Regi
	Zone	Zone	Zone	Zone	Zone	
<u>Needs</u>	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	
Increase per capita income and productivity	M	M	M	H	H	H
Reduce out-migration; increase population growth	L	L	M	M	M	L
Reduce unemployment, annual and seasonal	M	M	M	M	M	M
Increase male employment opportunities	L	M	M	H	H	M
Increase female employment opportunities	H	M	M	H	H	M/
Increase or provide employment opportunities for skilled and higher education	M	M	M	H	H	M/
Increase manufacturing employment	M	M	M	H	H	H
Increase services and construction employment	M	M	H	H	H	H
Increase industry divers- ification in each sector	H	H	H	H	H	H
Increase urban centres for industry and services	L	L	L	H	H	M

H - High Priority, M - Medium Priority, L - Low Priority.

orderly and rational development of the Province as a whole. In particular, total output per worker in all sectors of the regional economy should be increased. Controlled population growth should be encouraged through reducing out-migration or increasing in-migration where deemed necessary. Also very important is the provision of a wide range of employment opportunities for all members of the labour force, particularly in the secondary and tertiary sectors of the regional economy. Finally, economic efficiency should be improved by increasing the number of urban centres of a size which permits self-sustained growth in manufacturing and services employment.

Problem Identification The Niagara Region has traditionally owed its prosperity to both its specialized agriculture and its locational advantages for certain types of manufacturing. Both the specialized fruit growing areas and the tobacco growing areas are facing problems, the former from pressures of urbanization, and the latter from the uncertainties of the tobacco industry as a whole. In the manufacturing sector, the Niagara Region has not kept pace with Ontario in adding new jobs as old industries have stabilized or declined. Over half of the total employment in manufacturing is concentrated in slow growth industries.

Seasonality of employment is a particular problem in

the counties of Norfolk, Haldimand and Brant, where there are concentrations of employment in agriculturally based industries. Seasonality is also a problem in Lincoln because of the automotive industries. Employment opportunities are limited for both men and women in Norfolk and Haldimand counties. Female employment opportunities are also limited in Wentworth County because of the predominance of heavy industry in Hamilton. At the time of the Survey, there was a reported shortage of skilled tradesmen throughout the Region. With the excellent unemployment benefits provided by many companies, the mobility of highly skilled workers is very limited. Finally, the relatively limited job opportunities for university graduates seem to be resulting in an out-migration of such persons from the Region.

Sub-regions within the Niagara Region that have concentrations of slow growth industries and thus an unfavourable industry mix for long-term growth, are Brant, Lincoln and Welland counties. In addition, competition from the high-wage unionized industries is causing severe economic stress to many of the smaller manufacturers in the Region.

Technology Technological developments in many of the industries in the Region will probably result in a reduced demand for unskilled labour. Few of the industries interviewed during the Regional Development Branch's Survey of Manufacturing,

however, indicated any serious reduction in the numbers of workers employed in the immediate future. Many industries indicated, however, that they were in the process of or planning to install more sophisticated equipment, in particular the application of computerization to the production line.

2. Transportation and Communication Priorities

This goal aims at providing increased accessibility for urban and rural communities in the economical movement of persons and goods. More specifically, it is concerned with improving accessibility between the various centres of population on the one hand and between urban centres and natural resources, recreation areas, airports, etc. on the other, through the provision of better communication facilities. A further aim is to provide comprehensive transportation and communication planning so that the most effective combination of modes can be designed to meet regional needs.

Problem Identification While the road system in the Niagara Region is well developed, some routes are inadequate to carry existing traffic and have insufficient capacity to meet anticipated future needs. Improving the road system between centres should have high priority at the regional level, and particularly in the counties of Lincoln, Welland, Norfolk and Haldimand. Tentative solutions to these problems have been proposed in various regional transportation planning studies.

TABLE 8.2

TRANSPORTATION AND COMMUNICATION PRIORITIES

	Wentworth		Lincoln And Welland		Brant		Haldimand		Norfolk		Niagara Region
	Zone 1	Zone 2	Zone 2	Zone 3	Zone 4	Zone 5	Zone 4	Zone 5	Zone 5	Zone 5	
<u>Needs</u>											
Road improvements for rural areas, smaller centres	L	L	L	L	H	H	H	H	H	H	M
Road improvements between larger urban centres	M	H	H	M	H	H	H	H	H	H	H
Airport facilities and services improvement	?	?	?	?	?	?	?	?	?	?	?
Access to and from airports	?	?	?	?	?	?	?	?	?	?	?
Passenger rail services maintenance	?	?	?	?	?	?	?	?	?	?	?
Rail cargo services maintenance	L	L	L	L	H	H	H	H	H	H	M
Air freight services development	?	?	?	?	?	?	?	?	?	?	?
Truck freight services improvement	?	?	?	?	?	?	?	?	?	?	?
Pipeline transport of natural resources	L	L	L	H	L	L	L	L	L	L	L
Natural resource development roads	?	?	?	?	?	?	?	?	?	?	?
Port facility improvement	H	L	L	N/A	H	H	H	H	H	H	M
Access improvement to recreation areas	H	H	H	H	H	H	H	H	H	H	H
Scenic highway protection or development	H	H	H	H	H	H	H	H	H	H	H
Improvement of communication facilities	?	?	?	?	?	?	?	?	?	?	?

H - High Priority, M - Medium Priority, L - Low Priority.
N/A - Not applicable.

The Queen Elizabeth Way, which is being upgraded, will still not have the capacity to meet future requirements, particularly with regard to summer recreation traffic which at present accounts for the majority of trips made. Consideration of an additional highway orientated towards serving recreation traffic, and the improvement of access to recreation areas in general should be given a high priority. Simultaneously, measures designed to protect the scenic nature of areas of outstanding natural beauty, along highways in particular, should be given high priority throughout the Region.

The rural roads in Norfolk and Haldimand may be expected to become inadequate in meeting future demands as the new development proceeds in Nanticoke. Highway 6 between Port Dover and Hamilton will have a heavy volume of traffic, both cars and trucks, as will Highway 3 between Fort Erie and Highway 401. Similarly, because of this development rail cargo services should be maintained and improved in Norfolk and Haldimand. The construction of a water pipeline to the Brantford area should be given a high priority.

Technology The adoption of recent technological innovations in transportation could result in intensifying the Region's problems if they are not integrated into an overall transportation plan. With proper planning, the Region's potential could be enhanced by using transportation as a vital component in the structuring of the future spatial distribution of the Region's population and activities.

The introduction of hovercraft or hydrofoil services on the Great Lakes will become increasingly feasible for the transportation of both goods and people. Hovercraft have an advantage over the hydrofoil in that they can be used over either land or water, and the winter freezing of the Great Lakes would not interfere with the provision of regular services. With the imminent development of the Great Lakes Megalopolis and increased interaction between its major urban nodes, considerable demand will be generated for the development of fast and regular services on the Great Lakes. Therefore, it is advisable to plan now for the advent of the hovercraft by providing land for the development of routes and terminals, and the inevitable economic activities which will require land in the immediate vicinity.

Go-train type services may become desirable to connect the major centres of urban population in the Niagara Region. Such services would increase accessibility between the centres through reducing the time-distance between them and would also reduce road congestion. Increased use of containers in the movement of goods by rail is highly probable.

Ships on the Great Lakes have become larger in order

to facilitate the handling of bulky goods, and minimize the time spent in port. The future size of ships will, to a large extent, be governed by the capacity of the canals. In relation to the Niagara Region, the Welland Canal and the St. Lawrence Seaway will be of particular significance.

Containerization, which has already become important in the movement of general cargo, will continue to increase in importance. In order to provide this faster, more convenient service to the industries in the Niagara Region, ports will need specialized handling facilities.

The most significant development in air transport in recent years has been air freight for semi-bulk goods. The new jumbo jet airport to be located in Southern Ontario will benefit the industries both in the Niagara Region and in other areas of the Province.

3. Community and Regional Environment Priorities

This goal is concerned with developing the Niagara Region's communities and conserving its regional environment in a manner which will provide the optimum livability for current and future generations.

Problem Identification There are many serious environmental problems throughout the Region. Environmental pollution occurs in the form of water pollution (in all counties), and air

TABLE 8.3

COMMUNITY AND REGIONAL ENVIRONMENT PRIORITIES

<u>Needs</u>	<u>Wentworth</u>	Lincoln And <u>Welland</u>	<u>Brant</u>	<u>Haldimand</u>	<u>Norfolk</u>	Niag Regi
	<u>Zone</u> <u>1</u>	<u>Zone</u> <u>2</u>	<u>Zone</u> <u>3</u>	<u>Zone</u> <u>4</u>	<u>Zone</u> <u>5</u>	
Municipal water supply	M	M	M	H	H	H
Municipal sewage treatment	H	H	H	H	H	H
Reduction of air pollution	H	H	M	H	H	H
Reduction of scenic pollution	H	H	L	L	L	M
Reduction of environmental pollution by chemicals, pest controls	H	H	H	H	H	H
Urban noise abatement	?	?	?	?	?	?
Protection of prime farmland from urban development	H	H	H	H	H	H
Preservation of prime recreation areas	H	H	H	H	H	H
Protection of fish and wild- life habitat	H	H	H	H	H	H
Reduction of erosion	L	L	H	H	H	M
Conservation of prime forest resources	L	L	L	M	M	L
Use and restoration of mineral sites	H	H	M	M	M	M
Retain open space between urban centres	H	H	H	H	H	H
Prevent urban sprawl along highways	H	H	H	H	H	H
Concentrate urbanization in selected centres	H	H	H	H	H	H
Maintain variety of different sized centres	L	L	L	H	H	M
Maintain quality of urban neighbourhoods	H	H	H	M	M	H
Prepare urban and rural land use plans	L	M	M	H	H	H

H - High Priority, M - Medium Priority, L - Low Priority.

? - Data not available at present.

pollution (in Wentworth, Lincoln and Welland, especially at Hamilton). Erosion occurs along the Niagara Escarpment, in the Grand River Valley, and along parts of Lake Erie, together with small streams which flow through the Region. Varying levels of pollution exist in streams throughout the Region. Protection of fish and wildlife habitat is extremely important especially in light of the extensive water pollution in the Region.

Urban sprawl occurs along a number of urban corridors especially in Wentworth, Brant, Lincoln and Welland counties. There is also the danger of urban sprawl in Norfolk and Haldimand counties associated with future industrial development. It is essential that all parts of the Niagara Region have land use plans. It is most important that these be coordinated with the forthcoming plans being prepared by the Regional Development Branch and the Haldimand-Norfolk Study Group.

Technology Technology may contribute to the realization of these goals. The creation of more efficient air and water pollution control devices for industry, and erosion control devices seems assured. The development and installation of more efficient water purification and sewage disposal equipment will also help to solve these problems. The improvement of planning techniques and an increasing public awareness of the environmental dangers, may result in the creation and implementation of land use plans at the local level.

4. Social and Economic Welfare

This goal is directed at general improvement of the social and economic environment. Its aim is to provide opportunities and encouragement for every individual to meet his basic economic, psychological and physical needs and develop his fullest potential for self sufficiency while maintaining individuality, dignity and self-respect.

Problem Identification In attempting to improve socio-economic conditions for the Niagara Region the following problems should be considered:

- a. The levels of per capita income, average income per household and average personal income in Norfolk and Haldimand counties which are below the regional average.
- b. The differences in standards of living between the more urbanized counties of the north and northeast, and the more rural counties of the southwest.
- c. The inequalities of opportunity for native Indian and unskilled immigrant groups, both of which are disadvantaged in their search for higher incomes.

TABLE 8.4

SOCIAL AND ECONOMIC WELFARE PRIORITIES

Needs	Lincoln And Welland		Brant	Haldimand	Norfolk	Niagara Region
	Wentworth Zone 1	Zone 2	Zone 3	Zone 4	Zone 5	
Increase per cent families living above poverty level	M	M	M	H	H	M
Reduce proportion of persons requiring welfare	?	?	?	?	?	?
Equalize opportunities for native Indians, foreign born	M	M	H	M	M	M
Reduce disparity between urban and rural income	L	L	M	H	H	H
Improve social services for low income groups	?	?	?	?	?	H
Improve social services for the aged	M	M	M	H	H	H
Improve social services for the young	L	H	M	H	M	M
Improve social services for family and marital counselling	?	?	?	?	?	?
Improve social services for physically and mentally handicapped	?	?	?	?	?	M
Group social services in accessible centres	L	L	L	H	H	H
Improve condition of housing	H	M	M	M	M	H
Reduce overcrowding in dwellings	?	?	?	?	?	M
Reduce housing cost for low income	?	?	?	?	?	M
Increase range of housing type choices	M	M	M	H	H	M

H - High Priority, M - Medium Priority, L - Low Priority.

? - Data not available at present.

- d. The inadequacy of housing facilities in many areas and the lack of choice in housing for lower income families.

Although it is not possible at present to assign priorities for all social and economic welfare priorities, it is hoped that information from both the general public and from other government departments will enable such a judgement to be made in the near future.

5. Public Safety

This goal is concerned with reducing the hazards to individual life and property from external events and maintaining personal security. It includes minimizing the hazards to life and property from traffic, recreational, occupational and other accidents, and reducing the incidence of crime and fire.

Problem Identification The Niagara Region maintains a very satisfactory level of public safety as compared with the Province as a whole.

In Wentworth County, which has in general the most satisfactory level of performance, a high priority should be placed upon both reducing the incidence of crimes and increasing the level of police protection. A medium priority should be

Table 8.5

Public Safety Priorities

	Lincoln and Welland					Niagara Region	
	Wentworth Zone 1	Zone 2	Brant Zone 3	Haldimand Zone 4	Norfolk Zone 5		
<u>Needs</u>							
Reduce traffic fatalities	L	L	M	M	H	M	
Reduce recreation accidents	L	M	M	H	L	M	
Reduce occupational fatalities	L	M	L	M	H	M	
Reduce occupational accidents	L	L	L	L	L	L	
Reduce other accidents	M	M	M	L	H	M	
Reduce the incidence of crimes	H	M	L	L	L	M	
Increase level of police protection	H	M	L	L	L	M	
Reduce the incidence of fires	M	H	L	M	M	M	
Reduce property damage from fires	L	H	L	H	H	M	

H - High Priority, M - Medium Priority, L - Low Priority

given to reducing the incidence of fires, and reducing other accidental deaths. The latter include deaths from poisoning, firearms, falls, homicide, suicide and explosions.

Brant County also maintains a high level of public safety compared with the Province. Here, a medium priority should be placed upon reducing traffic fatalities, recreation accidents and other accidental deaths.

In Zone 2, the Regional Municipality of Niagara, the most important problem areas are the reduction of the incidence of fires and the property damage which they cause. Both these needs should be given high priority.

A medium priority should be placed upon all other needs enumerated for this zone with the exception of the reduction of traffic fatalities and occupational accidents, where the levels are significantly below the provincial average.

In the rural counties of Norfolk and Haldimand, a medium priority should be placed upon reducing the incidence of fires, and a high priority upon reducing the property damage caused. The deaths resulting from fires were also considered, but since these vary considerably from year to year it was decided to establish priorities based only upon incidence of fires and the property damage so caused. High priorities in Haldimand County should be also placed upon

reducing recreational accidents (death by drowning). In Norfolk County, a high priority should be given to reducing traffic and occupational fatalities and reducing other accidental deaths.

6. Health

This goal is concerned with achieving the best possible state of physical and mental health for the inhabitants of the Niagara Region at minimum public and private cost.

Problem Identification In the Niagara Region, health services merit general improvement as the level of these services is below that for the Province as a whole. Only in Wentworth County is the level of service above the provincial average. Hospitals, doctors and dentists are concentrated in the urban areas of the northern and northeastern parts of the Region, where the facilities are generally excellent. The more rural counties are at a great disadvantage both in terms of time it takes to travel to the centres where professional attention is provided, and in the range and most effective use of services available.

7. Education

This goal aims to provide opportunities and encouragement for each individual to achieve the highest intellectual, personal and social development of which he is capable. More

TABLE 8.6

HEALTH PRIORITIES

<u>Needs</u>	<u>Wentworth</u>	Lincoln And <u>Welland</u>	<u>Brant</u>	<u>Haldimand</u>	<u>Norfolk</u>	Niag Regi
	Zone <u>1</u>	Zone <u>2</u>	Zone <u>3</u>	Zone <u>4</u>	Zone <u>5</u>	
Reduce infant mortality and other premature deaths	?	?	?	?	?	?
Reduce V.D. and other communicable diseases	?	?	?	?	?	?
Reduce the incidence of dental caries	?	?	?	?	?	?
Reduce the incidence of mental illness	?	?	?	?	?	?
Reduce the incidence of drug addiction	?	?	?	?	?	?
Improve the medical facilities available	M	M	M	H	H	H
Increase the number of doctors, dentists, etc.	M	M	M	H	H	H
Improve ambulance services	?	?	?	?	?	?
Reduce public and private medical costs	?	?	?	?	?	?

H - High Priority, M - Medium Priority.

? - Data not available at present.

specifically, it aims to improve the level of educational attainment, the quality of facilities and the level of adult education.

Problem Identification Survival rates of children reaching Grade 13 from Grade 9 indicate that children in the Niagara Region perform at a very similar level to children in the Province as a whole. However, intra-regional disparities exist. Haldimand and Norfolk have the lowest proportion of children remaining in school until Grade 13 and on this basis these counties should be given high priority for educational improvements. Sub-regions 1 and 2, which perform better than the regional average, are not problem areas in this respect.

A lower student-teacher ratio could improve the quality of education by permitting greater individual attention, but there are significant exceptions. For example:

"in a small school with only a few rooms....a lower student-teacher ratio may exist with one teacher teaching all courses in several grades to a few pupils and accordingly unable

TABLE 8.7

EDUCATIONAL PRIORITIES

		Lincoln And				Niag
	<u>Wentworth</u>	<u>Welland</u>	<u>Brant</u>	<u>Haldimand</u>	<u>Norfolk</u>	<u>Regi</u>
<u>Needs</u>	<u>Zone</u>	<u>Zone</u>	<u>Zone</u>	<u>Zone</u>	<u>Zone</u>	
	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	
Reduce secondary school dropouts	L	L	M	H	H	M
Reduce pupil/teacher ratios	M	L	M	M	L	M
Upgrade smaller secondary schools	?	?	?	?	?	M
Increase post-secondary enrollment	?	?	?	?	?	M
Increase adult education courses	L	L	L	H	H	M

H - High Priority, M - Medium Priority, L - Low Priority.
 ? - Data not available at present.

to give as much individual attention as in a larger metropolitan school with higher student-teacher ratios."¹

At the regional level, the student-teacher ratio at the secondary school level compares favourably with the Province, but is somewhat higher for elementary schools. A reduction in the student-teacher ratio should be given medium priority in Wentworth, Brant and Haldimand.

Students in the southern and southwestern parts of the Niagara Region have very limited educational opportunities at the post-secondary level. It is very difficult for students to attend a university or community college while living at home because of the distance that has to be travelled.

8. Recreational and Cultural Priorities

This goal is concerned with enhancing the opportunity for residents and touring visitors to attain maximum recreational enjoyment and cultural enrichment in the use of leisure time.

Problem Identification Recreational and cultural amenities are of great importance to the Niagara Region since a large part of the regional economic activity involves tourism. The

¹Economic Council of Canada, Sixth Annual Review, Perspective 1975, (Ottawa: Queen's Printer), 1969, p.133.

TABLE 8.8

RECREATION AND CULTURE

	<u>Wentworth</u>	<u>Lincoln And Welland</u>	<u>Brant</u>	<u>Haldimand</u>	<u>Norfolk</u>	<u>Niag'ra Regi</u>
<u>Needs</u>	<u>Zone 1</u>	<u>Zone 2</u>	<u>Zone 3</u>	<u>Zone 4</u>	<u>Zone 5</u>	
Increase provincial parks	M	M	M	M	M	M
Increase regional and municipal parks	H	H	H	H	H	H
Increase public facilities for:						
Campsites	H	H	H	H	H	H
Hiking trails	H	H	H	H	H	H
Picnic areas	H	H	H	H	H	H
Boating facilities	H	H	H	H	H	H
Swimming facilities	H	H	H	H	H	H
Snowmobile and ski trails	M	M	M	M	M	M
Scenic drives	H	H	H	H	H	H
Outdoor and indoor group sports	?	?	?	?	?	?
Increase private facilities for resorts	H	H	H	H	H	H
Increase private facilities for weekend and vacation cottages	H	H	L	H	H	H
Increase and improve libraries	?	?	?	?	?	?
Increase and improve art galleries, museums	M	M	M	H	H	H
Increase and improve TV and radio stations	?	?	?	?	?	?
Increase and improve weekly and daily newspapers	?	?	?	?	?	?
Preserve historic sites and buildings	M	M	M	M	M	M

H - High Priority, M - Medium Priority, L - Low Priority.

? - Data not available at present.

population of the Region and of the areas in Ontario and North America which contribute tourists and tourist dollars is rapidly increasing. It is, therefore, important that the recreational and cultural facilities for these tourists expand at least as quickly as the demand. Also, as leisure time increases, so recreational and cultural activities will increase. The Niagara Region will be under very heavy pressure to meet these needs. Since recreation has in the past provided a very good source of regional income, its future development should be encouraged.

The most easily identifiable problems for expansion are created by soaring land acquisition costs, which make it difficult to meet the need for more regional and municipal parks, for increased private facilities for resorts and for scenic drives along the Escarpment. The quality of the facilities, however, is often more unsatisfactory than the quantity. Poor quality resulting from environmental pollution frequently impedes expansion. Consequently, swimming and boating facilities suffer from the high levels of water pollution throughout the Region.

The cultural facilities should also be expanded, for example, the Shaw Festival at Niagara-on-the-Lake. The maintenance of historic sites and buildings is particularly important and should be continued.

Technology Technological innovation in the field of environmental and pollution control will add great impetus to the development and expansion of recreational facilities.

Overall Regional Priorities Many of the problems being faced by the Region are due to the fact that the Niagara Peninsula is an old, well-established area. Many of its facilities, both public and private date back to the nineteenth and early twentieth centuries. Rapid rates of technological change are making many of these facilities obsolete.

It should also be remembered that in addition to serving its own needs the Region is and has been for the past century serving certain provincial and national needs. Its location, for example, has resulted in the Region being used as an international crossroads. Many of the problems, therefore, which are associated with both land and water transportation are of national and provincial as well as of regional origin. Its unique combination of natural resources together with its close proximity to Metro Toronto, have resulted in the Region's emergence as a provincial recreation area. Hence problems associated with recreation are of provincial as well as regional responsibility.

Its fruit-growing industry and its non-metallic mineral extraction industries are among the only such industries in the

TABLE 8.9

OVERALL REGIONAL PRIORITIES

<u>Needs</u>	<u>Wentworth</u>	Lincoln And <u>Welland</u>	<u>Brant</u>	<u>Haldimand</u>	<u>Norfolk</u>	<u>Niagara</u>
	<u>Zone</u> <u>1</u>	<u>Zone</u> <u>2</u>	<u>Zone</u> <u>3</u>	<u>Zone</u> <u>4</u>	<u>Zone</u> <u>5</u>	<u>Region</u>
Economic development	M	H	H	H	H	H
Transportation and communication	M	H	M	H	H	H
Community and regional environment	H	H	M	H	H	H
Social and economic welfare	M	M	M	M/H	M/H	M/H
Public safety	L	M	L	M	M	M
Health	M	M	M	H	H	M
Education	M	M	M	H	H	M
Recreation and culture	H	H	H	H	H	H

H - High Priority, M - Medium Priority.
 ? - Data not available at present.

Province. Hence their continued existence should be a matter of provincial as well as regional concern.

The same is true for the general environmental problems facing the Region. They are in part at least the result of user-pressures originating outside the Region. The table of regional objectives represents a preliminary evaluation of overall regional priorities.

APPENDIX 1

SUBMISSION BY
THE SOUTH ONTARIO ECONOMIC DEVELOPMENT COUNCIL
NOVEMBER 30TH, 1968

SUMMARY OF FINDINGS, SOLUTIONS AND/OR PROBLEMS
AS PERCEIVED BY THE SOUTH ONTARIO ECONOMIC DEVELOPMENT COUNCIL¹

1. All reports indicate that the most pressing problem is one of a lack of sufficient sewage treatment facilities. A control or implementation of control, of both the enlargement and development of these facilities on a regional basis appears to be imperative. The approach of the O.W.R.C. to this problem in Lincoln County, as outlined in the Sears Report, would appear to be most applicable to the region and should be investigated further.
2. Although everyone is aware that through the Department of Health, and through the O.W.R.C., specific programs of control of air and water pollution are now being implemented, local controls should be co-ordinated to assist in the definite identification of sources of problems. A program of continuing education on the causes of this problem and the misuse of resources by mankind,

¹ Prepared by Gordon L. Sutin and Associates Ltd., November 30, 1968 for the Council which was then known as the Niagara Regional Development Council. This submission does not in any way reflect government policy.

should be directed to the children of today (the citizens of tomorrow) to alleviate the source of this problem in the future.

3. The concept of planning and the control of planning varies considerably from zone to zone. The establishment of planning authorities with professional staff to co-ordinate completely rural development within the region is a necessity. Also the development of an educational program throughout the region at both adult and student level on both the purpose and the importance of planning, would have a great future benefit.
4. The subject of refuse disposal as both a cost item and a nuisance item, was raised in each of the zones. Investigation of the scope of the problem, both today and in the future, has been recommended, plus the consideration of either individual zone controls or for the future, a program of regional control to offset the high capital cost that would occur through individual incineration systems. Since this area constitutes a municipal control function, under provincial policing, co-ordination of an overall system would require, obviously, the efforts of the N.R.D.C.

5. The development of recreational facilities, camp sites, beaches, parks, etc. was raised as an important item in all zones. Although it was common knowledge that serious consideration is being given at all levels of government to the Lake Ontario and Lake Erie coast lines, it was felt that greater authority at some level should be given to the concrete establishment of beaches in these areas. Of great importance is the fact that the County of Haldimand, Welland, and Brant stressed very greatly the need for total development of the Grand River watershed. Each area has stressed the need for this total development not only as an area of recreation, but as an economic resource in the development of tourism. Economically, the majority of funds for such an overall project of this nature should be provided by the Federal Government, and a stronger authority appears to be necessary to reorganize the priorities of action in the development of this major waterway. Consideration needs to be given to determine whether the control of this River is to just prevent flooding, or to meet the recreational and economic needs of the people within the region. Surrounding this program is also the requirement of a strong educational program to promote the public or community usage of the River, and at the student level, to

understand the need for cleanliness in the maintenance of such a waterway, and the further use of this resource as an educational facility in the fields of natural science.

6. Although the implementation of regional government is at present under serious consideration by the provincial authorities, we must note that both Lincoln and Welland counties appear to be at a stage where action could take place as a pilot project for the first two County amalgamation.² At both zone meetings, opinions were expressed that there were apparent benefits for all concerned. Since Brant and Haldimand are included within the Grand River area, as proposed in the Smith Report, and as yet a commission has not investigated the ramifications of regional government within that particular area, very little discussion was held on the pros and cons of this particular subject. Pressing for this investigation could be of importance, and at the same time, investigation could be conducted into the area of economic influence surrounding Brant County, to determine whether or not

²Regional government was established for the counties of Lincoln and Welland on January 1st, 1970, under the name Regional Municipality of Niagara. A study of regional government has been completed for Wentworth County, and a study is at present underway for Haldimand and Norfolk Counties also.

there is a decided north south influence between the counties of Haldimand, Norfolk and Brant.

7. Throughout the counties of Haldimand, Welland, and Brant, the subject of a lack of supply of fresh water appears to be quite important. Suggestions were made that a provincial authority should consider to set up a central supply from Lake Erie. Haldimand County as a whole, and economically the lowest on the ladder, has very little source of fresh water. Such a problem will of course require a considerable investigation, and consideration will have to be given to the level of authority and the source of funds.
8. To continue our agriculture areas and our small centres of economic influence, thought must be continually given to the requirement of good access to major highways. As the railway is steadily bypassing the smaller community, it is important that the road network pick up these smaller communities. With the future economic development of this region, consideration must be given for the total transportation system. Further investigations of the concepts developed by Mr. R. Bailey, P. Eng., Director of Planning for the City of Hamilton, should be conducted and completely correlated with the regional planning concept as expressed in Item 3. The impact of high speed

transportation system throughout this region will be a major factor controlling the economic growth and the location of centres of influence within the next 20 years.

9. The subject of the Indian Reserve at Brantford was raised at that zone meeting, and although this is one of Federal responsibility , under law, the influence of this Reserve must not be ignored by the region. It is disturbing to note that in this community of approximately 6,000 persons, with a birth rate approximately double the national average, we have a potential school population that is growing at an alarming rate, and yet from Grade 8 on, there are no educational facilities. All Indian Children of that level are being bussed many, many miles to Brantford to receive their education. Further to this, within Brant County there are no post secondary educational institutions. This in itself, is worthy of serious consideration by the N.R.D.C.
10. Along the Lake Ontario shore in the County of Wentworth and Lincoln, some authority at some time must give consideration to the preservation of the so called fruit belt. A detailed analysis of arable versus poor soil, along with a planned program of both residential and industrial development (as suggested by Mr. Murray Pound,

Director of Planning for the Hamilton-Wentworth Planning Board) could be established on a 2 county basis and preserved under an official plan.

11. Areas of urban development within the region were listed in order of importance as follows:

Residential and Commercial

Level of Importance

First

Welland

Brantford

Burlington

St. Catharines

Jarvis

Second

Niagara Falls

Paris

Hamilton

Grimsby

Dunnville

Third

Port Colbourne

Brantford Township

Dundas

Vineland

Hagersville

Industrial

Level of Importance

First

Welland

Brantford

Burlington

St. Catharines

Nanticoke

Second

Thorold

Paris

Hamilton

Grimsby

Dunnville

Third

Niagara Falls

Brantford Township

Saltfleet

Smithville

Hagersville

APPENDIX 2

SUBMISSION BY THE
NIAGARA REGION ADVISORY BOARD

November 7th, 1968.

NIAGARA REGION ADVISORY BOARD

POINTS FOR CONSIDERATION AND RECOMMENDATIONS FOR PROGRAMMES¹

The Niagara Region is very fortunate in its geographical position, its topography and ground cover, in that it is adjacent to large population groupings, has fertile farmlands, ample water resources, an extensive lakeshore giving excellent harbour facilities and recreational opportunities, and has large and cheap power supplies, which have prompted the rapid development of industry and commerce. It would seem, therefore, to be a region giving an excellent balance of full employment, recreational facilities and a cheap and varied selection of food products.

It is obvious that the development of any area should be designed to exploit to the full the potential of that particular area so that -

- (1) areas of rich farmland be preserved as such for food production.
- (2) poor land, especially that adjacent to high population centres, should be developed for industry, commerce and residential use.
- (3) areas of natural beauty, such as lakeshores, river basins and escarpment areas should be preserved for recreation and conservation.

¹ Submission made to Regional Development Branch, November 7, 1968. This submission does not in any way reflect government policy.

These aims, though seemingly obvious for the common good, are in violent conflict, but much can be done if it is felt by wise planning, reasonable legislation and gentle coercion to realize their fulfilment.

A brief analysis of these three development aims is given hereunder with certain recommendations.

1. PRESERVATION OF FARMLAND

Due to the energetic and rapid development of this region the balance of resources is dangerously threatened and once lost may never be recovered. Industrial, commercial and residential development are taking place at a tremendous pace and this expansion is generally at the expense of our fruit and farmlands. These lands are being lost at an alarming rate and those in authority appear to view the situation either with utter complacency or with dangerous hesitancy. The extent of this problem can be judged by the fact that farm acreage, for example, decreased in this region by 67,598 or 8% between 1951 and 1966, and the fruitlands by 4,002 acres or 7% in the same period. These losses, however, are accelerating but they are not too apparent at the present time due to the fact that increased efficiency has a compensating effect on total volumes produced by the farms. This effect, however, cannot continue indefinitely and the increasing population, with its resulting

expanding demand, can only be satisfied by a corresponding continuing increase in production.

It is true that dairy produce and the swine and poultry population has increased, but it would be wrong to sacrifice our present varied nature of agricultural production to specialize, and hence face violent fluctuations in this section of the region's economy due to the vagaries of the market. There is also an extreme danger that, unless the farm industry is assured of a planned and continuing future, that prospective farmers will be discouraged by uncertainty and so seek other forms of employment.

There is a present and ever increasing problem of the land speculator who buys control of large tracts of farm land. Rarely is the necessary investment of capital made in such land to preserve its productivity and too often the land and buildings are allowed to deteriorate. This has a profound effect on the surrounding community in that -

- (a) the land and buildings become very unsightly,
- (b) weeds, insect pests with disease are encouraged,
- (c) adjacent land values are inflated,
- (d) it has a disrupting effect on the farm community due to the uncertainty of the future of individual farms.

Unfortunately our present legislation makes it easier for such land speculations in that they can take advantage of preferential treatment with regard to taxation while they wait for their land to appreciate in value.

If therefore, a vigorous and developing farm industry is to be maintained it is recommended that the following steps be taken.

- (a) An overall land-use plan for the region should be introduced at once.
- (b) Recognition must be given to the need to preserve for future world food production the best soils of the Niagara Region, including all of the tender fruit soils as a first priority.
- (c) Inasmuch as local and municipal governments have not been able to effect an orderly use of land, then the regulations must be enforced at a higher level of government.
- (d) Professional Agrologists should be employed as members of Planning Boards, and in the drafting of land-use regulations.
- (e) Every effort should be made to standardize regulations within municipalities through Regional Government.
- (f) Landowners holding agricultural land for speculative purposes should be faced with a business tax or some type of penalty which would eliminate the problem of induced

neglect of purchased farms, or force them to maintain the property in agricultural production.

- (g) Expropriation legislation should include the requirement that all such action must conform to official land-use plans.
- (h) Accelerate the existing program of adult education directed toward providing training in skills of farm management and production, which should include training in marketing procedures.
- (i) Step-up research in the marketing and distribution of fruit and vegetable crops to find means of obtaining better quality products to wider markets across the country.

2. ALLOCATING AREAS FOR INDUSTRIAL, COMMERCIAL AND RESIDENTIAL CONSTRUCTION

The basic needs of industry are raw materials, ample power supplies and skilled labour. Southern Ontario has the power and labour, but few raw materials and as power can be transported easily we have almost complete flexibility in the location of industry. One further requirement of industry and commerce, of course, is an efficient transportation system which to-day depends almost entirely upon highways, and to a lesser extent the railroads. Roads and railways are built to-day only when the need is demonstrated and although both means of transportation are developed in tune

with the expansion of the area they have basically little influence initially. Development of the area once started tends to spread from the first root and absorb the surrounding land, regardless of its suitability for other purposes, while in other parts of the Province vast areas of land lie derelict and unused. It would, therefore, seem desirable to encourage settlement of these poorer areas in order to preserve for the best use all land available and to limit dense urban growth to manageable size. A recommendation has already been made in 1(c) with regard to enforcement of land-use regulations and this would appear very necessary when the present action of some municipal authorities is considered. Here industrial and commercial growth is encouraged to the exclusion of all other considerations simply to increase the dollar value of their assessment and one suspects that due to competition amongst Municipalities to attract industry, zoning requirements are being relaxed and a more permissive attitude adopted with regard to air and water pollution. It is, therefore, recommended that -

- (a) In order to distribute population more equitably that road and rail construction be undertaken now to areas set aside for industrial and commercial development.
- (b) A study should be made with regard to providing these areas with power (oil, gas, hydro) and water.
- (c) Set up tax structure to compensate agricultural

districts for the restrictions imposed on industrial and commercial development so that local farm communities can enjoy equal social and other living standards as urban communities.

- (d) Set Arbitration Council to adjudicate on conflicting uses for particular area.

3. RECREATION AND CONSERVATION

It is in this area that the support and financial assistance of higher authority will be required before this aim is realized. The provision of adequate areas for recreation and conservation can only be obtained by energetic action and the expenditure of vast sums of money. It certainly should be our aim to have such open spaces within walking distance of one's home and by careful planning our urban areas should be adequately sprinkled with parks, large and small.

Outside large population centres, but within easy driving distance, larger areas are required and further afield large national or provincial parks, such as that at Algonquin. A start has been made but a great deal more must be done in order that we can cater for the needs of coming generations. One fact, which seems to be inhibiting the force of direct action, is the multiple authority charged with the responsibility to provide recreational areas, and

in the Niagara Region now fewer than seven separate bodies are involved. Much can be done also in amalgamating the responsibility for small watersheds under larger conservation authorities. Combining these units would add power, sufficient, it is hoped, to make their voice effective. It is unfortunate that the time and money expended on these projects have no tangible return and hence such projects are, by government, first sacrifices in times of austerity and last financed when money is available. Yet the return in social well-being of the community cannot be over-estimated when one views the crime and oddities bred in the urban sprawl. It is, therefore, recommended that -

- (a) A co-ordinating body be founded to centralize and strengthen the responsibility for recreational areas.
- (b) Combining Conservation Authorities presently administering smaller watersheds to centralize responsibility.
- (c) Assess now the future need for recreation and conservation on the assumption that the population of the region is six million³ and the influx of tourists will increase from twelve million a year at present to twenty-four million.
- (d) Control these properties by direct purchase or by entering into an agreement with the owners to preserve the land from development and pay compensation in some form.

³ This figure refers to a possible future population of the Golden Horseshoe which might be utilizing the recreational resources of the Niagara Region.

APPENDIX 3

THE REGIONAL MUNICIPALITY OF NIAGARA

THE REGIONAL MUNICIPALITY OF NIAGARA

COMPONENT
MUNICIPALITIES

COMPRISED OF
THE FORMER

CITIES -

- | | | |
|----|----------------|---|
| 1. | NIAGARA FALLS | City of Niagara Falls
Vge. of Chippawa
Twp. of Crowland (Part)
Twp. of Humberstone (Part)
Twp. of Willoughby (Part) |
| 2. | PORT COLBORNE | City of Port Colborne
Twp. of Humberstone (Part) |
| 3. | ST. CATHARINES | City of St. Catharines
Twp. of Louth (Part) |
| 4. | WELLAND | City of Welland
Twp. of Crowland (Part)
Twp. of Humberstone (Part)
Twp. of Thorold (Part) |

TOWNS -

- | | | |
|----|---------------------|---|
| 5. | FORT ERIE | Town of Fort Erie
Vge. of Crystal Beach
Twp. of Bertie
Twp. of Willoughby (Part) |
| 6. | GRIMSBY | Town of Grimsby
Twp. of North Grimsby |
| 7. | LINCOLN | Town of Beamsville
Twp. of Clinton
Twp. of Louth (Part) |
| 8. | NIAGARA-ON-THE-LAKE | Town of Niagara
Twp. of Niagara |
| 9. | PELHAM | Vge. of Fonthill
Twp. of Pelham
Twp. of Thorold (Part) |

10. THOROLD

Town of Thorold
Twp. of Crowland (Part)
Twp. of Thorold (Part)

TOWNSHIPS -

11. WAINFLEET

Twp. of Wainfleet

12. WEST LINCOLN

Twp. of Caistor
Twp. of Gainsborough
Twp. of South Grimsby

APPENDIX 4

INDICATORS OF PERFORMANCE, EVALUATION STAGE

INDICATORS OF PERFORMANCE, EVALUATION STAGE

POPULATION

Total Population
% change 1966/1951

Total Population
% change 1966/1961

Urban Population
% change 1966/1961

Rural Population
% change 1966/1961

Rural Farm Population
% change 1966/1961

Rural Non-Farm Population
% change 1966/1961

Population Density 1966

Population 20-64 years of age
% change 1966/1951

Population 65 years of age and over
% change 1966/1951

Total Population by Townships
% change 1966/1951

EDUCATION

Population 5 years of Age and Over (not attending school)
with 1-8 years of schooling
% change 1961/1951

EDUCATION (cont'd)

Population 5 years of Age and Over (not attending school)
with 9-12 years of schooling
% change 1961/1951

Population 5 years of Age and Over (not attending school)
with 13 + years of schooling
% change 1961/1951

LABOUR FORCE

Participation Rates
% change 1961/1951

Male Participation Rates
% change 1961/1951

Female Participation Rates
% change 1961/1951

Total Labour Force
% change 1961/1951

Labour Force in Primary Industries
% change 1961/1951

Labour Force in Manufacturing Industries
% change 1961/1951

Labour Force in Construction Industries
% change 1961/1951

Labour Force in Tertiary Industries
% change 1961/1951

INCOME

Average Personal Income
% change 1966/1961

Average Household Income
% change 1966/1951

INCOME (cont'd)

Proportion of Households with Incomes of Less than \$3,000
% change 1966/1961

Proportion of Households with Incomes of \$10,000 and Over
% change 1966/1961

AGRICULTURE

Total Number of Farms
% change 1966/1951

Total Farm Area
% change 1966/1951

Total Farm Cash Receipts
% change 1966/1951

Farm Capital Value
% change 1966/1951

Value of Land and Buildings
% change 1966/1951

Value of Land and Buildings per acre
% change 1966/1951

Value of Machinery and Equipment
% change 1966/1951

Value of Livestock and Poultry
% change 1966/1951

Total Number of Commercial Farms
% change 1966/1961

Number of Commercial Farms with Cash Receipts \$2,500 - \$9,999,
% change 1966/1961

Number of Commercial Farms with Cash Receipts \$10,000 and over,
% change 1966/1961

MINING

Total Value of Production
% change 1966/1961

MANUFACTURING

Total Employment in Manufacturing
% change 1964/1961

Total Value Added in Manufacturing
% change 1964/1961

Value Added in Manufacturing per Employee
% change 1964/1961

CONSTRUCTION

Total Value of Building Permits Issued
% change 1966/1961

Total Value of Building Permits Issued Per Capita
% change 1966/1961

Total Value of Building Permits Issued
% change 1966/1957

Value of Building Permits Issued for Residential Construction
% change 1966/1957

Value of Building Permits Issued for Industrial Construction
% change 1966/1957

Value of Building Permits Issued for Commercial Construction
% change 1966/1957

Value of Building Permits Issued for Institutional and
Governmental Construction
% change 1966/1957

RETAIL TRADE

Total Value of Retail Trade
% change 1966/1951

Per Capita Value of Retail Trade
% change 1966/1951

Number of Stores in Retail Trade
% change 1966/1951

Number of Employees in Retail Trade
% change 1961/1951

WHOLESALE TRADE

Total Value of Receipts in Wholesale Trade
% change 1961/1951

Per Capita Value of Receipts in Wholesale Trade
% change 1961/1951

Number of Locations in Wholesale Trade
% change 1961/1951

Number of Employees in Wholesale Trade
% change 1961/1951

SERVICE TRADES

Total Value of Receipts in Service Trades
% change 1961/1951

Per Capita Value of Receipts in Service Trades
% change 1961/1951

Number of Locations in Service Trades
% change 1961/1951

Number of Employees in Service Trades
% change 1961/1951

ABSOLUTE CHANGE

Total Population 1966/1951

Urban Population 1966/1961

Average Personal Income 1966/1961

Retail Sales per Capita 1966/1951

APPENDIX 5

A STRATEGY FOR SOUTHWESTERN ONTARIO DEVELOPMENT

A STRATEGY FOR
SOUTHWESTERN ONTARIO DEVELOPMENT

A Joint Statement
by the
Department of Treasury and Economics
and the
Department of Municipal Affairs

March 17, 1970

FOREWORD

This statement of development strategy for Southwestern Ontario has benefited substantially through receipt of original ideas and advice from both the Niagara and the Lake Erie Regional Development Councils and the Haldimand - Norfolk Joint Study Committee. Successful planning coordination requires not only that interdepartmental communication among civil servants be maintained on a continuing basis, but also that all multi-county plans produced by either Department for Southwestern Ontario receive suggestions and advice from Regional Development Councils, local municipalities and units of Regional Government, and the private sector.

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A STRATEGY FOR SOUTHWESTERN ONTARIO DEVELOPMENT

A. Background

In defining goals for Ontario's Regional Development Program (Design for Development, Phase I, April 5, 1966), the Hon. John Robarts, Prime Minister of Ontario, stressed our belief that "regional plans and priorities should always contribute to the total environmental development and economic performance of the (whole) province" and that "regional development policies are... aspects of a broader provincial growth policy".

To achieve this wider, multi-regional coordination, certain administrative machinery was created, including a Cabinet Committee on Policy Development, Chaired by the Prime Minister, and an Interdepartmental Advisory Committee on Regional Development, Chaired by the Deputy Treasurer and Deputy Minister of Economics. The regularly scheduled meetings of these committees have ensured, and will continue to ensure, overall Provincial policy coordination among departments in the development of all regions.

In practice, it has also been found advisable to implement this spirit of coordination at the civil servant level through the formation of ad hoc interdepartmental and intergovernmental study

committees. Such committees have been examining the inter-regional planning issues involved in the future growth of the metropolitan Toronto and Oshawa areas.

B. Areawide Coordination in Ontario's High Performance Regions

The work of these committees has demonstrated that there is a fundamental social and economic relationship between the high performance Central Ontario region and the almost equally dynamic remainder of Southwestern Ontario. No one of these regions can be effectively planned in isolation from the others.

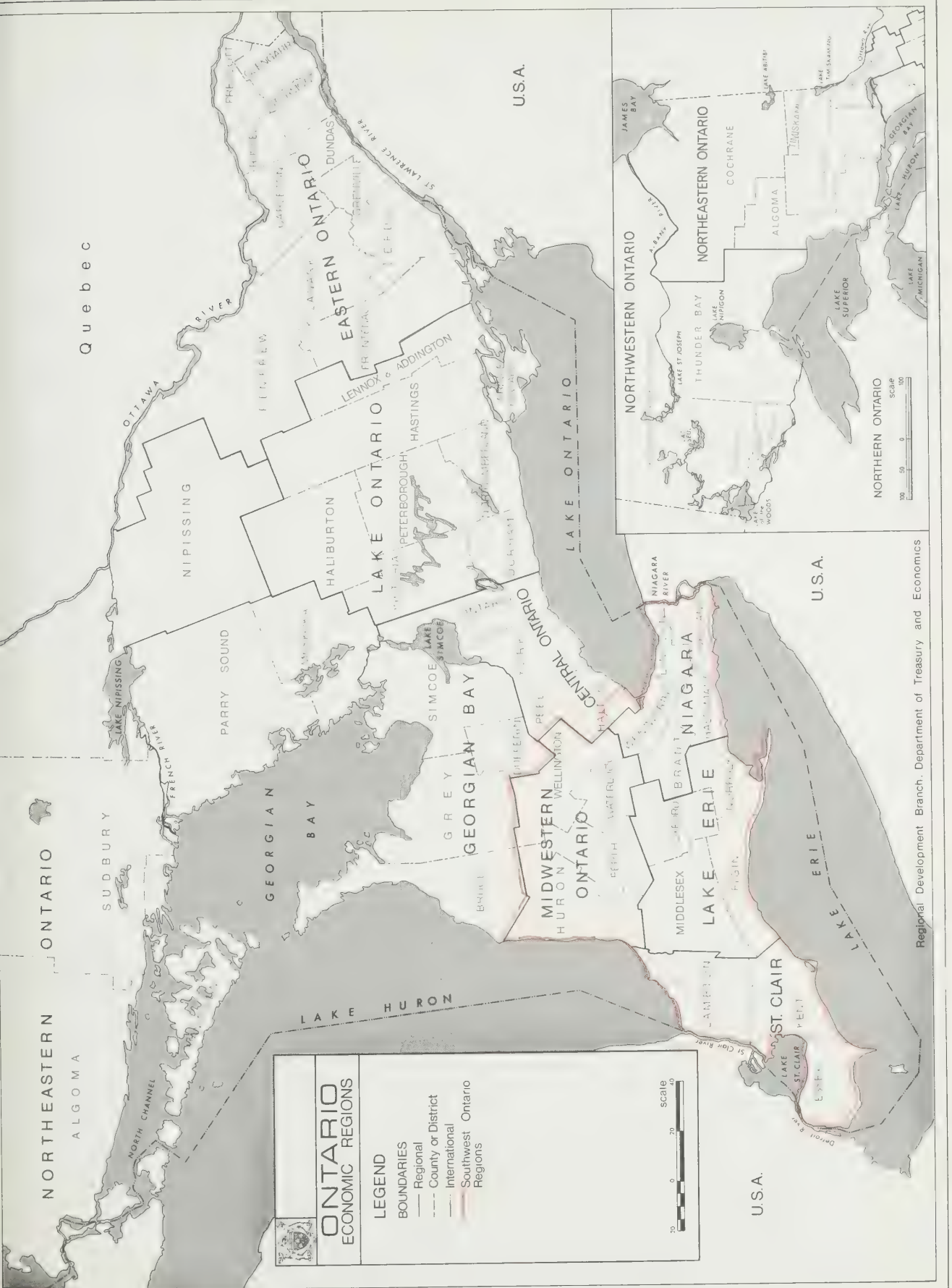
Since the need for inter-regional coordination has already been recognized and is now being served in the Toronto and Oshawa areas, this paper will concentrate on issues requiring coordination in the Niagara, Midwestern Ontario, Lake Erie and St. Clair regions, hereafter referred to as Southwestern Ontario.

C. Inter-Regional Coordination in Southwestern Ontario

Recent events have demonstrated the need for inter-regional coordination of development planning in the heavily urbanized and rapidly developing southwestern Ontario regions of Niagara, Midwestern Ontario, Lake Erie and St. Clair. (See Figure 1).

Perhaps the most dramatic of these current happenings has been the emergence of the Lake Erie foreshore as a major

Figure 1



future corridor of heavy industrial development for the next 30 years. The widely spaced site plans of the Steel Company of Canada, Dominion Foundry and Steel Company, Texaco and Ontario Hydro demonstrate the urgency of planning lakeshore development and conservation as a continuous system from Windsor to Port Colborne, requiring collaboration among three closely related economic regions.

One element in this lakefront planning must be the conservation and development of water-oriented recreation resources. Land-oriented recreation is also important to Southwestern Ontario and a multi-regional recreation system plan - the Niagara Escarpment Study - is now being evaluated.

Throughout Southwestern Ontario, inland cities are increasingly turning to Lake Erie and Lake Huron for their future supply of municipal water. The most economical use of these long distance distribution pipelines requires inter-city collaboration and inter-regional planning.

Finally, under the supervision of the Advisory Committee on Regional Development, the Regional Development Branch of the Department of Treasury and Economics and the Department of Municipal Affairs are nearing completion of plans for Southwestern Ontario and evaluation studies and plans for the Haldimand-Norfolk area. The studies of both departments and the Haldimand-Norfolk

Joint Study Committee reveal the presence of very strong future urbanization pressures within Southwestern Ontario. The best guidance for solutions to such growth problems cannot be found in planning perspectives which are limited by the artificial boundaries of a single municipality, a single county or even a single region.

It is the purpose of this policy paper to provide a broad regional setting for viewing Southwestern Ontario's overall development, to apply Ontario's existing regional development goals as development objectives for Southwestern Ontario, and to explore the implication of these development objectives for planning in the Haldimand-Norfolk area.

D. Southwestern Ontario's Regional Setting

As an initial step in preparing regional plans, the Regional Development Branch carried out a massive analysis of trends in the Province, using 63 indicators of social and economic change. In this study, changes within the smallest geographic unit for which data were available were compared with the rate of change for the Province as a whole. Five levels of overall performance have been identified: very high, moderate, average, moderately low and very low.

Figure 2 shows the overall trends in Ontario by county,

Regional Development Branch, Department of Treasury and Economics

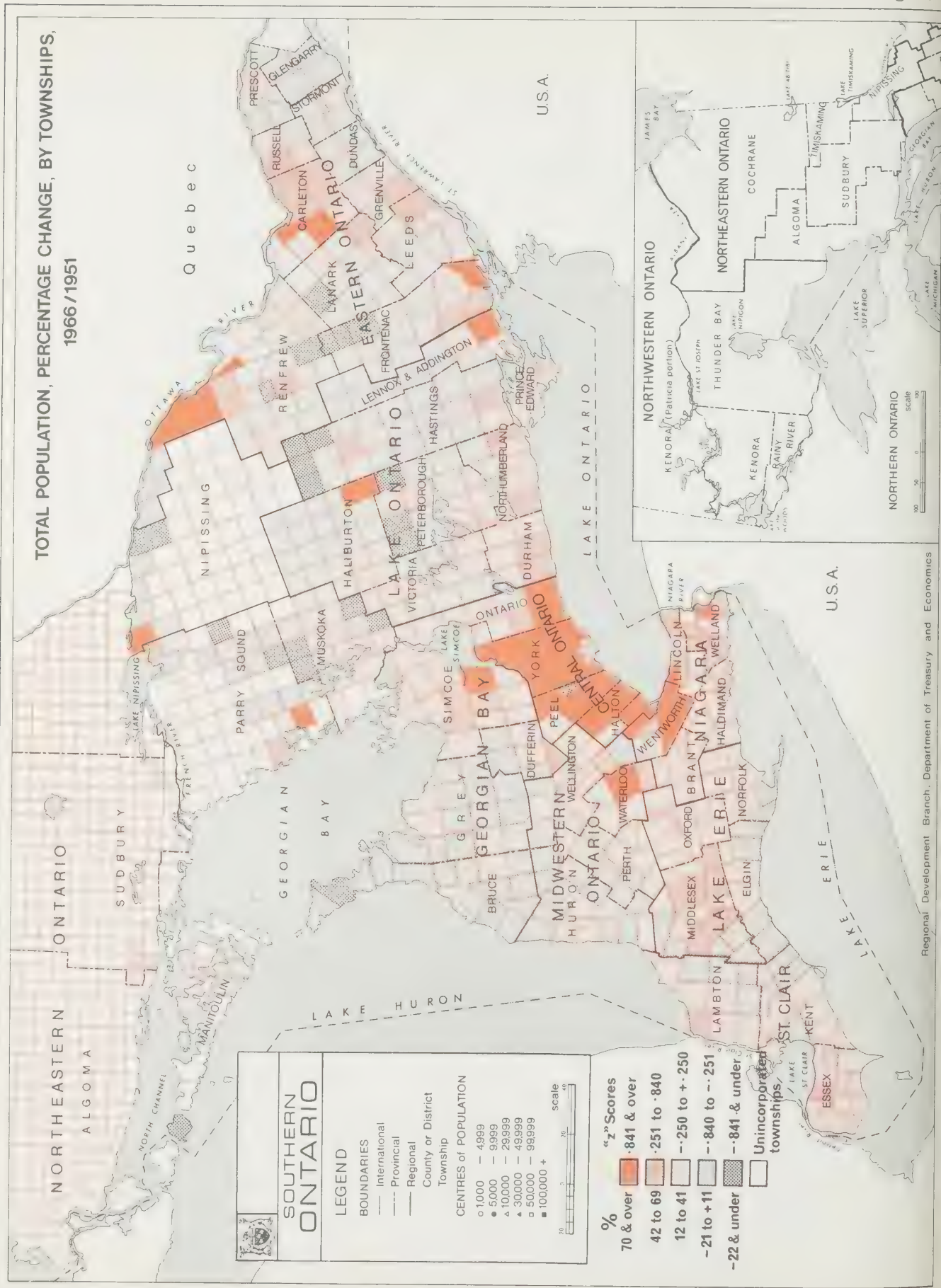


as revealed by all 63 indicators. Figure 3 shows the change in total population of the Province by townships between 1951 and 1966. In each case we can clearly see the very high relative growth rate around the western end of Lake Ontario, extending throughout Southwestern Ontario to the international border at Windsor and Sarnia. It is conspicuous that the only sizable areas which have been by-passed by this generally continuous belt of prosperity and growth are those southern tier counties and townships which will experience the most direct and immediate impact from development of the Stelco and Dofasco sites.

The rush to acquire waterfront industrial sites along Lake Erie and the multi-regional growth of Southwestern Ontario are not coincidental events but, at least in part, the consequence of international geography and trade patterns which are shaping new megalopolitan forms of human settlement.

In his Developing Urban Detroit Area Research Project, C.A. Doxiadis identifies an embryonic "Great Lakes Megalopolis" extending roughly from Milwaukee to Pittsburgh by way of Chicago, Detroit and Cleveland, with a "Canadian Extension" along the north shores of Lakes Erie and Ontario and the St. Lawrence River to Quebec City; and another extension from the Niagara-Buffalo area into New York State towards the so-called "eastern megalopolis". Similarly, Change, Challenge, Response: A Development Policy for New York State, published in 1964 by the State Office for Regional

Figure 3



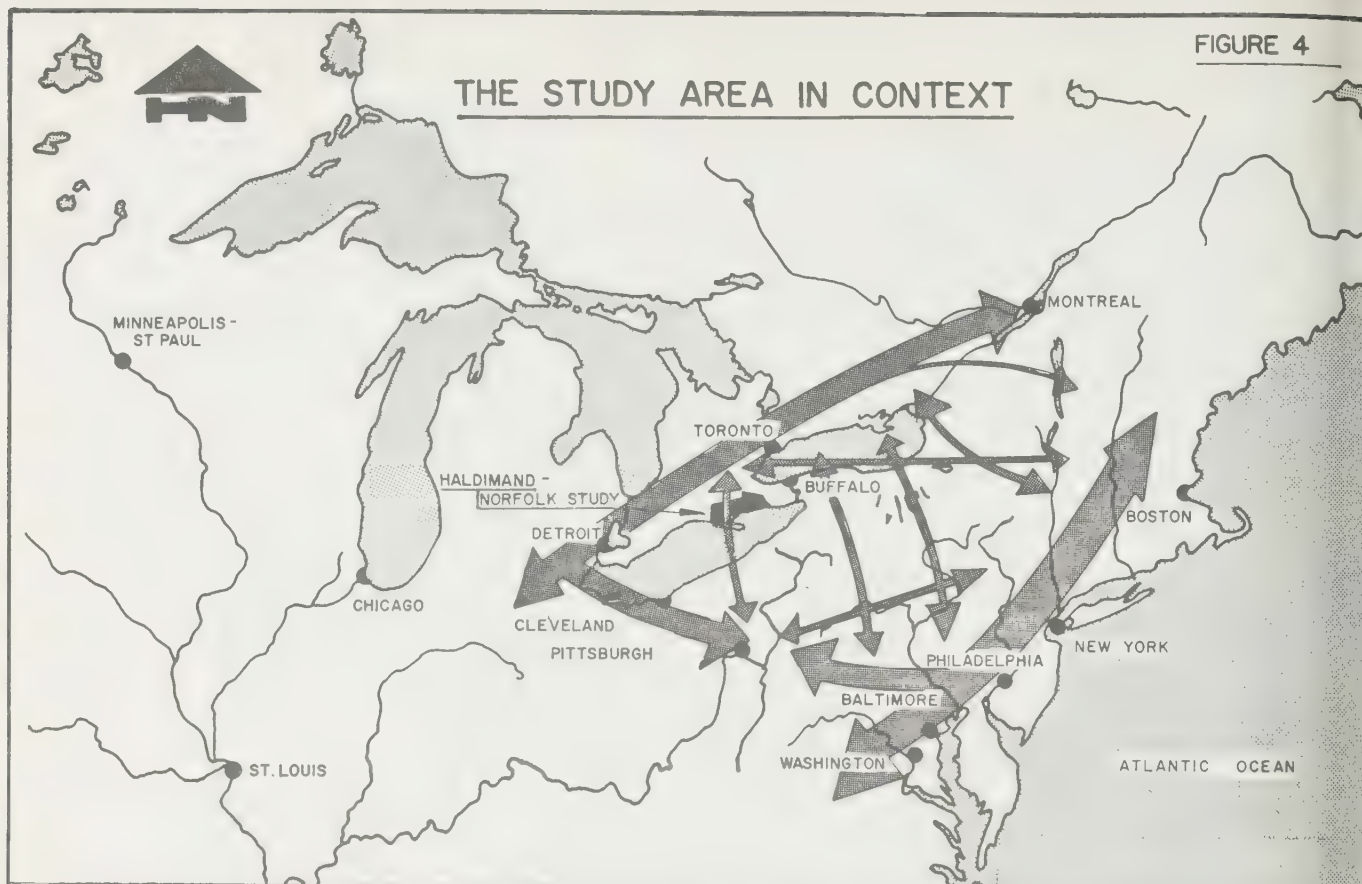
Development, identifies two major development corridors, Detroit-Montreal and Washington-Boston, with offshoots converging on Pittsburgh; and several secondary development corridors, one extending roughly from Hamilton towards Boston. (See Figure 4)

Both studies, then, agree on the emergence of two major urban complexes on the "macro-regional" scale, one in the southern part of the Great Lakes Region, and one on the eastern seaboard. Both reports see a developing link between them, running from Niagara Falls-Buffalo to Boston.

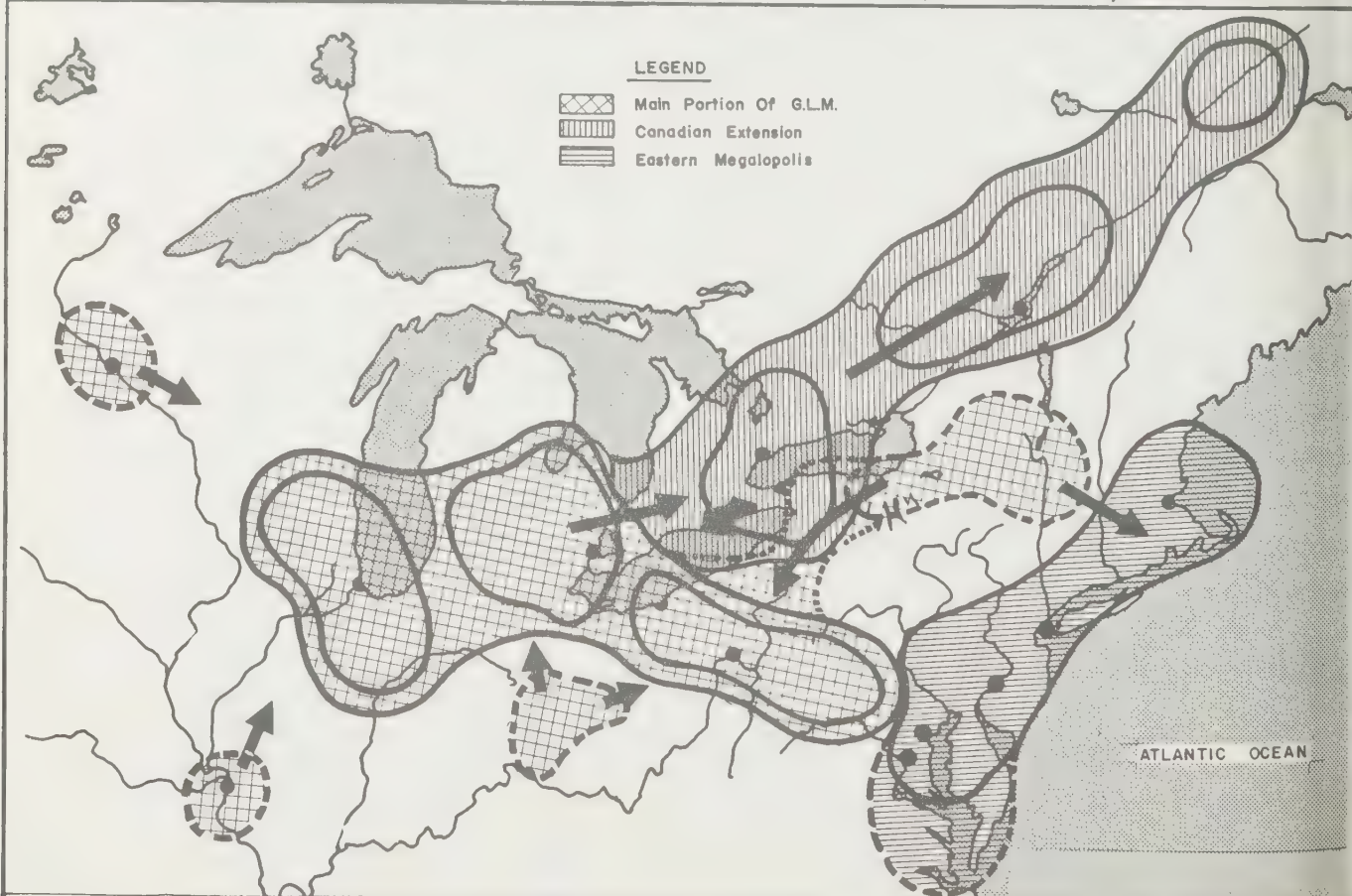
It is thus possible to envisage the gradual emergence of a major development corridor from the eastern shore of Lake Michigan to the Atlantic, by way of Southwestern Ontario and the Mohawk Gap. For Ontario, this would mean something analogous to the "401 Corridor" (or, in Professor E. G. Pleva's term, the "Grand Trunk Corridor") extending from Windsor and Sarnia through London and Waterloo-Kitchener to Niagara Falls-Welland and Toronto.

Admittedly, this is impressionistic. But, if one makes the reasonable assumption of a gradual dismantling of U.S. - Canada trade barriers, and if one considers the probable long-term development pattern of east central North America as a whole (and we will increasingly have to think at this scale), the prospect is not at all unrealistic. It is certainly significant that four of the largest industrial developments announced in Ontario in the last

THE STUDY AREA IN CONTEXT



DEVELOPMENT CORRIDORS, NEW YORK STATE after "CHANGE, CHALLENGE, RESPONSE"



GREAT LAKES "MEGALOPOLIS" after DOXIADIS

few years are in this corridor: Ford at Talbotville, Dofasco at Port Burwell and Stelco and Texaco at Nanticoke. The implication is that Ford, Stelco, Dofasco and Texaco are not isolated occurrences which merely happened to occur fairly close to each other, but are probably the forerunners of a new "industrial revolution" among the communities and farmlands of Southwestern Ontario.

As previously noted, industrialization is already precipitating sustained multi-regional urban growth which can be expected to accelerate to very sizable proportions over the next three decades. With proper advance planning, the 12,000 square miles of Southwestern Ontario should readily accommodate all prospective land use requirements.

We also acknowledge the challenge of avoiding the urban sprawl, congestion, high social costs, loss of prime farmland and environmental erosion which have frequently characterized North America's other super-city, the Atlantic Coastline Megalopolis.

The realization of Southwestern Ontario's full potential and minimization of these implicit environmental conflicts depend upon the fulfillment of existing Provincial regional development goals and the application of these goals as planning objectives in shaping future growth in the Niagara, Midwestern Ontario, Lake Erie and St. Clair regions.

E. Ontario's Regional Development Goals:

In the White Paper, Design for Development, Phases I and II, presented in the Legislature by the Prime Minister and the Minister of Municipal Affairs, the Ontario Government outlined certain fundamental regional development policies. These were later elaborated by the Treasurer and Minister of Economics in November 1969, as follows:

1. That the vital role of the private sector be recognized, that its contribution to the Provincial economy be continuously assessed in view of Provincial needs and resources, and that Provincial policies be formed to encourage a rational expansion of the private sector.
2. That individuals be encouraged to develop their full capabilities through provision of a climate of expanding social and economic opportunities for each region.
3. That regional and resources policies encourage adequate development of the natural environment while conserving the aesthetic and ecological balance qualities of that environment.
4. That the timing and impact of Ontario's large and expanding public expenditures be effectively planned and co-ordinated to fulfil, in an orderly way, the needs of regions in the Province as well as the Province itself.

5. That this be a Program for Regional Development which must necessarily involve a working partnership between all of the people of Ontario and Government.

F. Development Objectives for Southwestern Ontario:

Southwestern Ontario is characterized by a large number of medium-sized communities, distributed in depth throughout a compact urbanizing area which extends approximately 180 miles from east to west and 60 miles northward from Lake Erie. Many of the area's communities have developed a fair degree of economic specialization in chemicals, primary metals, transportation equipment, agricultural equipment, and in educational, health and insurance services. There is no evidence that this specialization will or should soon end. For the area as a whole, it has provided a very diversified economic base, and for individual communities, many of the traditional social and economic problems of one-industry towns have been mitigated by the proximity of nearby communities providing alternative sources of employment.

The following development objectives are designed to build upon this historic capability for regional economic strength through local specialization while at the same time enhancing community social diversity through improved inter-regional mobility.

Regional plans for Southwestern Ontario should, therefore,

seek to achieve:

1. A form of development which combines regional economic diversification with industrial specialization in sub-regional zones and improves community social balance through diversified regional employment opportunities.
2. A distribution of economic growth opportunities for private industry which provides employment within commuting range of all parts of the four Southwestern Ontario regions.
3. A nodalized decentralization of urban growth which avoids unsightly and uneconomic sprawl or strip linear development, but rather, builds upon existing centres' capacity for growth, and distributes this growth among a large enough number of centres to retain a human scale in the size of future communities, thus ensuring economies of scale without the diseconomies of congestion.
4. A transportation system which shapes the pattern of future urban growth as a deliberate instrument of long-term development policy, provides community residents with easy commuting access to a variety of nearby employment, cultural and service centres, and provides employers with the ready availability of an expanded and diversely skilled labour market, significantly larger than that of any single community.

5. An environmental protection which, while accommodating population growth, ensures the economic provision of water and sewer services along multiple-service corridors, and protects the future use of the region's strategic waterfront and escarpment recreation lands and prime farm soils.
6. A flexibility in planning which recognizes the many unpredictable elements in future technology, modes of transportation, industrial location and personal life style and maintains the region's capacity to accommodate such changes; a realism which utilizes the existing hierarchy of urban centres for economic distribution of public services, but acknowledges the variability in individual community growth which can never be precisely predicted.
7. A pattern of partnership in planning which encourages local participation in each critical stage of the planning process and ensures that resulting action programs reflect an amalgam of local municipal, county, regional and Provincial viewpoints.

G. Implications for Planning in the Haldimand-Norfolk Area

For the past 12 months, the Department of Municipal Affairs in cooperation with other departments and the Haldimand-Nor-

folk Joint Study Committee have been reviewing the growth implications for Haldimand and Norfolk counties of Stelco's decision to develop a new steel plant at Nanticoke. Simultaneously, the Department of Treasury and Economics' Regional Development Branch has been analyzing overall trends, problems and future development opportunities in the wider Niagara and Lake Erie regions. The two departments will be presenting complementary plans for this area of Southwestern Ontario in the near future, and both agree that the foregoing regional development goals and objectives suggest the following planning principles for the Haldimand-Norfolk area:

1. Full use should be made of the development potential of existing urban centres in planning the distribution of future regional growth.
2. Any new centres required should be located along major prospective transportation corridors where strategic gaps occur in the current distribution of growth centres. Such new centre sites should be selected in areas where they can draw upon the employment, cultural and service facilities of existing centres and receive future population overflow from the larger of such neighbouring centres.
3. Wherever development alternatives permit a conscious choice among new sites for residential or industrial use, care should be exercised in order to minimize

the loss of better soils or recreation sites and to avoid disturbing the local ecology.

4. The selection of new centre sites should give careful consideration to the possible economies of shared regional water supply systems. Larger inland centres of Southwestern Ontario are already planning to draw upon the Great Lakes for future water supplies. The water distribution pipelines designed to serve these centres should be planned on a regional basis.
5. Future lakefront industrial sites should be consolidated where services and access roads can be shared and should be in locations which present the least conflict with the most attractive existing and future recreation areas.
6. Any major future transportation facility planned for the Lake Erie shoreline should be located close enough to the lakefront to serve the east-west travel desires of industrial and private vehicular travel, but far enough inland to ensure that induced urban growth does not impinge upon either lakefront industrial, recreational, or scenic-drive sites.
7. The precise location of this Lake Erie transportation facility, its access points and its interchanges with north-south connections to non-lakefront centres should

be planned with the intent of enhancing the nodal function of strategic southern tier growth centres which will be named in the development plans for the regions.

8. The priority assigned in scheduling major transportation improvements will reflect both prospective future traffic demand and such development objectives as:
 - a) Encourage the location of employment opportunities within those areas which have experienced below average rates of social and economic development in recent years.
 - b) Forestalling the community deterioration and travel congestion which could result from a significant increase in industrial and commuter traffic along existing highways.
 - c) Minimizing the danger of uncontrolled linear urban sprawl filling in the undeveloped lands between communities along existing highways leading to major future industry and employment concentrations.
9. Success in avoiding indiscriminant scatteration of future urban growth in Southwestern Ontario depends very largely upon effective limitation of access along regional highways, control of subdivision development and concentration of future water and sewage treatment facility investment in selected growth centres. All regional plans should be in accord with Provincial commitments to:

- a) Incorporate access limitation features in all major new improvements to inter-regional and inter-city highway facilities.
- b) Maintain strict control over residential and commercial subdivision along those inter-regional and inter-city highways which must serve increasing traffic volumes until new limited access facilities can be provided.
- c) Allocate priorities for new municipal water supply and sewage treatment facilities in accord with regional plan designation of future growth centres.

APPENDIX 6

SELECTED MEASURES OF URBAN GROWTH

SELECTED MEASURES OF URBAN GROWTH

1. Functional Type of Centre, 1969

<u>Type</u>	<u>Description</u>	<u>Generalized Population Ranges</u>
1	Megalopolitan Centre	Above 500,000
2	Supra-regional Centre	250,000 to 500,000
3	Regional Centre	42,000 to 300,000
4	Sub-regional Centre	7,800 to 50,000
5	Full Convenience Centre	800 to 9,000
6	Minimum Convenience Centre	220 to 1,500

These types were selected using a list of typical functions, business and other services which draw people from the surrounding territory into the centre. The general criteria for rating centres included the kind and number of commercial and industrial facilities, transportation and communications, cultural and recreational facilities, and service facilities. In addition, the relative location of the centre, the pattern of trip frequencies and the distances travelled were considered to be significant in the final classification of the centre. Data sources included Dun and Bradstreet Reference Book, May 1969, telephone directories and statistical tabulations prepared by the Regional Development Branch.

2. Trade Area Size, 1969

The boundaries of the trading area of each functional type of centre were defined by the journey-to-work zones. The centres were then rated according to the following:

<u>Trade Area (square miles)</u>	<u>Rating</u>
Above 800	1
701 - 800	2
601 - 700	3
301 - 600	4
Below 300	5

3. Trading Area Population, 1966

Trading area populations (defined by journey-to-work zones) were rated as follows:

<u>Trading Area Population</u>	<u>Rating</u>
Above 199,999	1
100,000 to 199,999	2
50,000 to 99,999	3
25,000 to 49,999	4
Less than 25,000	5

4. Wholesale Sales, 1961

Data are available only for centres of 5,000 population and over. The middle rating (3) includes the provincial norm for all urban centres. Other breakpoints are determined by a statistical procedure which normalizes the distribution of this measure so that there is a relatively even number of centres falling above and below the middle category for all Ontario.

<u>Wholesale Sales (\$ 000)</u>	<u>Rating</u>
Above 78,229	1
43,740 to 78,229	2
14,510 to 43,739	3
1,000 to 14,509	4
Less than 1,000	5

Source: D.B.S. Census of Canada, Wholesale Trade, 1961, Vol. IV, Part 2

5. Manufacturing Employment, 1968

Data are available only for selected centres. The middle rating includes the provincial norm for all centres for which data are available. The categories were determined as in 4.

<u>Manufacturing Employment, 1968</u>	<u>Rating</u>
Above 13,500	1
4,501 to 13,500	2
1,501 to 4,500	3
500 to 1,500	4
Less than 500	5

Source: D.B.S. The Manufacturing Industries of Canada (Geographical Distribution), Section 9, 1961, Special Tabulations, Ontario Statistical Centre

6. Provincial and Federal Government Services

Government services data were provided by the Provincial and Federal Departments of Public Works and the Provincial Department of Justice (Real Property Inventory, 1969). This inventory consisted of an 85 per cent sample of all existing government services. Additional coverage was derived from telephone directories. The government services provided were weighted by spatial area and intensity of service provided. Weighting was done on a scale of 1 to 5 for each service.

(i) Spatial Area of Service Provided

The following weights were used for the spatial area of service provided:

PROVINCIAL AND FEDERAL GOVERNMENT SERVICES, RATINGS BY URBAN CENTRES,
1969 - NIAGARA REGION

Centre	WEIGHTS					Rating
	Federal		Provincial		Total	
	Spatial	Intensity	Spatial	Intensity		
Beamsville	2	6	6	5	19	5
Brantford	21	25	40	39	125	2
Burlington	5	9	22	25	61	3
Caledonia	1	5	5	7	18	5
Cayuga	1	5	24	26	56	3
Chippawa	1	5	-	-	6	5
Crystal Beach	1	5	4	6	16	5
Delhi	5	9	6	8	28	5
Dundas	4	7	6	3	20	5
Dunnville	7	12	7	7	33	4
Fonthill	1	5	3	3	12	5
Fort Erie	23	24	5	7	59	3
Grimsby	2	6	2	2	12	5
Hagersville	2	6	-	-	8	5
Hamilton	47	43	87	74	251	1
Jarvis	1	5	5	6	17	5
Niagara Falls	17	21	19	20	77	3
Niagara-on-the-Lake	28	31	-	-	59	3
Paris	4	8	1	4	17	5
Port Colborne	17	20	5	5	47	4
Port Dover	5	9	1	1	16	5
Port Rowan	6	10	-	-	16	5
St. Catharines	46	44	46	43	179	1
Simcoe	17	19	33	33	102	2
Stoney Creek	4	9	-	-	13	5
Thorold	6	9	2	2	19	5
Waterdown	-	-	5	7	12	5
Waterford	2	6	1	4	13	5
Welland	9	13	28	30	80	3

- Nil

Source: Special Tabulations Provincial and Federal Departments of Public Works and the Provincial Department of Justice, Central Real Property Inventory, 1969, and Telephone Directories.

(1) ACCESSIBILITY, SCORES AND RATINGS BY URBAN CENTRES, NIAGARA (SOUTH ONTARIO) ECONOMIC REGION, 1969

FUNCTIONAL TYPE OF CENTRE	ROADS			RAIL		PORTS			AIRPORTS		TOTAL SCORE (10)	ACCESSIBILITY RATING (11)	
	Freeways (400 series) Score (1)	Secondary Highways Score (2)	Rail Line Score (3)	Master Freight Terminal Score (4)	Type I Score (5)	Type II Score (6)	Type III Score (7)	Major Airports Score (8)	Secondary Airports Score (9)				
<u>Regional Centres</u>													
Hamilton	10	130	5	10	10	1	1	10	5	182	1		
St. Catharines	10	40	5	10	1	7	3	5	5	86	2		
<u>Sub-Regional Centres</u>													
Brantford	3	100	5	10	1	-	1	10	5	135	1		
Burlington	10	70	5	10	10	-	-	10	5	120	1		
Niagara Falls	10	40	5	10	-	7	3	5	5	85	2		
Welland	5	60	5	10	-	5	5	5	5	100	1		
<u>Full Convenience Centres</u>													
Dundas	5	90	5	10	10	-	-	10	5	135	1		
Dunnville	3	30	3	3	1	1	5	5	5	56	4		
Fort Erie	10	20	3	5	-	1	1	5	5	50	4		
Grimsby	10	30	5	5	5	5	1	5	5	71	3		
Paris	5	60	5	10	1	-	1	10	5	97	1		
Port Colborne	5	50	5	10	-	7	3	5	5	90	2		
Simcoe	3	40	3	3	-	-	3	10	5	77	3		
Stoney Creek	10	50	5	10	10	1	1	5	5	97	1		
Thorold	10	60	5	10	-	7	3	5	5	105	1		
<u>Minimum Convenience Centres</u>													
Beamsville	10	20	5	5	1	5	3	5	5	59	4		
Caledonia	5	40	3	3	5	-	1	10	5	72	3		
Cayuga	3	40	5	3	1	1	3	5	5	66	3		
Chippawa	10	10	5	10	-	5	3	5	5	53	4		
Crystal Beach	10	20	3	5	-	5	3	5	5	56	4		
Delhi	3	30	5	3	-	-	1	10	5	69	4		
Fonthill	5	40	5	10	1	5	5	5	5	81	2		
Hagersville	3	50	5	3	1	-	3	5	5	75	2		
Jarvis	1	40	3	3	1	5	3	5	5	63	3		
Niagara-on-the-Lake	5	-	3	5	-	5	1	5	5	29	5		
Port Dover	1	30	3	3	-	-	5	5	5	52	4		
Port Rowan	1	10	1	1	-	-	1	10	5	29	5		
Waterdown	10	50	5	10	10	-	1	10	5	100	1		
Waterford	3	20	5	5	-	-	3	10	5	51	4		

(1) See selected measure 11 of Appendix 6 for a detailed discussion of accessibility.

- Nil

Sources: Official Road Map, 1968, Department of Highways Ontario.
Economic Atlas of Ontario, published for the Government of Ontario by the University of Toronto Press, 1969.
Data from major railway companies.

<u>Spatial Area</u>	<u>Weight</u>
Immediate urban area	1
Urban area plus adjacent townships (typically the journey-to-work zone)	2
County or district area	3
Economic region	4
Province	5

The following are typical examples of spatial area weights:

1. Provincial: Department of Highways - patrol yard
Federal: Postmaster General - Post office
2. Provincial: Department of Justice and Attorney -
General - O.P.P. Detachment
Federal: National Revenue - Customs and Excise office
3. Provincial: Department of Lands and Forest - General
office
Federal: Department of Manpower and Immigration
- Manpower office
4. Provincial: Department of Social and Family Services
- Regional office
Federal: Indian Affairs and Northern Development
- Regional office
5. Provincial: Department of Justice and Attorney General
- Ontario Police College
Federal: Department of Transport - Headquarters of
Welland Canal Operations

(ii) Intensity of Public Use of Service Provided

<u>Weight</u>	<u>Intensity of Use</u>
1	<p>(a) This service is used primarily as an administrative unit.</p> <p>(b) The service is also offered by agencies other than provincial or federal agencies; i.e. private and/or municipal bodies</p> <p>(c) The service is not a direct contact with the people it services. Typical examples include, at the provincial level, the Department of Treasury and Economics Savings Bank, and at the federal level, the main Administrative Offices of the Department of Agriculture.</p>
2	<p>This service caters to relatively few people in relation to the total trade area of the centre. Specifically, it caters to <u>selective</u> groups that are <u>not</u> dominantly from the trade area in which the service is located. The service may also be offered by agencies other</p>

than provincial or federal agencies; i.e. private and/or municipal bodies, and is used quite intensively by the general population. A provincial government example would include the Department of Correctional Services - Reformatory; and the Federal Government Level, an example would be the General office of the Department of Indian Affairs and Northern Development.

- 3 This service caters to a moderate selective group of people on a day-to-day basis, but is not generally available to everyone who asks for it. There are certain prerequisites needed in order to qualify for the service. Examples would include the provincial Department of Social and Family Services, General Offices, and General offices of the Federal Department of Health and Welfare.
- 4 This type of service caters to people on a day-to-day basis. The service is geared to offer a specific function for a limited period of time. Ontario Provincial Police Detachments of the Department of Justice and the Attorney-General and Canada Manpower Centres of the Federal Department of Manpower and Immigration are examples.
- 5 This service caters to people at large on a day-to-day basis. The service can be used by anyone at any time of the year. A typical example would be post offices.

Finally centres were rated according to both the spatial and intensity weights based on an aggregation of scores for both Federal and Provincial services. In this way, the number and importance of all government services were ascertained for each centre. Ratings were allocated according to the following aggregate scores.

<u>Total Federal and Provincial Intensity and Spatial Weights</u>	<u>Ratings</u>
Above 150	1
86 to 150	2
51 to 85	3
30 to 50	4
Less than 30	5

7. Population Growth of Centres, Percentage Change, 1961 to 1969

<u>% Change 1969/61</u>	<u>Rating</u>
Above 27.4	1
16.3 to 27.4	2
6.7 to 16.2	3
4.5 to 6.6	4
Less than 4.5	5

Source: Department of Municipal Affairs, Ontario Population Statistics,
Community Planning Branch, 1968.
Department of Municipal Affairs, 1970 Municipal Directory,
Municipal Finance Branch, 1970.

The data are again normalized and percentage change categories chosen so that the middle range includes the provincial rate of change with an even distribution of centres above and below the provincial range.

8. Retail Sales, Percentage Change, 1961 to 1966

Data are available only for centres of 1,000 population and over. The data source is the D.B.S. Census of Canada 1961 and 1966.

<u>% Change 1966/61</u>	<u>Rating</u>
Above 96.3	1
59.3 to 96.3	2
36.0 to 59.2	3
10.0 to 35.9	4
Less than 10.0	5

The third rating includes the provincial rate of change of retail sales for this time period.

9. Manufacturing Employment, Percentage Change, 1961 to 1968

The data source is the same as in measure 5 with categories chosen by the same statistical procedure.

<u>% Change 1968/61</u>	<u>Rating</u>
Above 68.2	1
40.2 to 68.2	2
16.2 to 40.1	3
-23.9 to 16.1	4
Less than -23.9	5

10. Growth Prospects of the Economic Base, 1969

A five fold rating was developed to rank each centre's growth orientation of the economic base utilizing to large extent information gathered in field surveys, from municipal and regional planning organizations, the Regional Development Councils and the Services Section of the Regional Development Branch. In this context the following topics were considered:

- an evaluation of the proportion of employment in each centre in anticipated growth industries.
- a careful look at the tertiary sector, especially in terms of city and region-serving activities.

- the capacity of the centre to attract new employment noting recently announced new plants.
- the capacity of the centre to absorb further population growth especially in terms of housing and other elements of the socio-economic infrastructure.
- an investigation of the development to date of the transportation network serving a centre and especially in terms of providing residents with easy commuting access to employment and services and for the private sector, significant labour markets.
- the attractiveness of the centre in terms of cultural and recreational services.

<u>Growth Prospects</u>	<u>Rating</u>
High	1
Medium to High	2
Medium	3
Slow to Medium	4
Slow	5

11. Accessibility Rating, 1969

This indicator was developed from accessibility scores using four transportation modes - road, rail, water and air.

Road: The weights given to each centre depended on its proximity to the nearest freeway interchange and density of secondary road links. The data source was Official Road Map, 1969, Department of Highways, Ontario.

Rail: Using the Economic Atlas of Ontario, published for the Government of Ontario by the University of Toronto Press, 1969, and data from major railway companies, scores were derived by determining each centre's proximity to existing lines and major freight terminals.

Ports: A scoring system taking into consideration different types of ports and facilities and the accessibility of centres to these ports is the basis on which a total port score was developed. The classification of ports originated from data on handling and service facilities, maximum draft and wharves feet, as shown in the Atlas of Ontario 1969, (Map 91).

Airports: Scores related to the proximity of centres to major airports and to secondary airports (with full year operation).

The accessibility rating summed the road, port and airport scores for each centre which was then classified according to the following:

<u>Accessibility Score</u>	<u>Rating</u>
Above 91	1
75 to 91	2
60 to 74	3
45 to 59	4
Less than 45	5

12. Cultural and Recreational Facilities, 1969

This measure portrays in the aggregate the availability of such local amenities as: cinemas, arenas, billiard parlours, bowling alleys, dance halls, curling clubs, golf courses, local libraries, auditoriums, art galleries, universities, museums, symphony orchestras, theatres and so on. Some of these facilities are relevant only to the smaller urban areas. Other cultural and recreational facilities (such as the last six mentioned above) exist only when the level of demand is quite large. The availability of facilities are therefore ranked in relation to the size of each urban centre.

In addition, there are unique facilities such as historical features, festivals, athletic games, carnivals etc. which give special identities to urban centres in which they occur. In sum, the availability of cultural and recreational facilities plus unique local events are rated for each urban centre according to the following scale:

<u>Availability of Cultural and Recreational Facilities</u>	<u>Rating</u>
Good	1
Moderate to Good	2
Moderate	3
Poor to Moderate	4
Poor	5

13. Water and Sewer Spare Capacity, 1968-1969

1968 data on these services were derived from the Ontario Water Resources Commission, field surveys conducted by the Regional Development Branch, and data from the 1968 Industrial Directory of Municipal Data for Ontario Municipalities, Industrial Development Branch, Department of Trade and Development. The following is a description of the characteristics involved in the ratings:

<u>Characteristics of Water and Sewage Systems of Centres</u>	<u>Rating</u>
The systems have ample unused capacity, relative to the centre's population, in both water and sewage.	1

The systems are adequate for moderate community expansion but there exists constraints in one of the services which may limit growth potential. 2

The systems are operating at or near capacity. Community expansion is limited unless the present system is extended or certain limiting problems within the system rectified. 3

Either the water or sewage system is inadequate to meet future population or industrial demands. There are definite growth constraints and capital outlays will be necessary before growth can be accommodated. 4

- (a) Both water and sewage facilities are inadequate to meet current demands.
- (b) There are no municipal water or sewage systems. 5

14. Availability of Industrial Sites, (insert date for which data is available)

Among other things, the potential success of urban centres in attracting new manufacturing plants (and hence increased employment) depends upon the availability and the degree of development of suitable industrial sites. The following rating system attempts to assess not only the area of industrial land available (acreage), but also the equally important municipal action in controlling land costs (municipal ownership), land use (zoning by-laws) and the provision of services (i.e. water, roads and railways).

<u>Site Characteristics</u>	<u>Rating</u>
-----------------------------	---------------

Ample land acreage owned, zoned, serviced	1
Ample land acreage not zoned but serviced, or zoned but not serviced	2
Limited land acreage, owned, zoned and serviced	3
Limited land acreage not zoned but serviced, or zoned but not serviced	4
No land available for industry	5

APPENDIX 7

SURVEY OF MANUFACTURING QUESTIONNAIRE

SURVEY OF MANUFACTURING

Regional Development Branch
Department of Treasury and Economics
880 Bay Street
Toronto 181, Ontario

Date: _____

Interviewer: _____

Interviewed: _____

Position: _____

A. Introductory Section

1. Name of Firm: _____

2. Address: _____

3. Telephone Number: _____

4. S.I.C. _____

5. Is this firm a **branch** plant? Yes _____ No. _____

6. Please give location of head office: _____

B. Employment and Labour Force

1. Please list the average number of employees in your establishment in 1968, by skill levels as indicated:

	PRODUCTION WORKERS*			Sub-total	Admin, Sales, Office & Other	Total
	Skilled	Semi-skilled	Unskilled			
Male	_____	_____	_____	_____	_____	_____
Female	_____	_____	_____	_____	_____	_____
Total	_____	_____	_____	_____	_____	_____

2. Please list the average number of employees which your establishment had in 1961 or the closest year to 1961 for which data are available. If data are incomplete, please give as much detail as possible.

	PRODUCTION WORKERS*			Sub-total	Admin, Sales, Office & Other	Total
	Skilled	Semi-skilled	Unskilled			
Male	_____	_____	_____	_____	_____	_____
Female	_____	_____	_____	_____	_____	_____
Total	_____	_____	_____	_____	_____	_____

*Skilled - Labour that requires extensive special training or a trade, for its satisfactory performance.

Semi-skilled - Labour having some training or experience, but requiring no extensive prior training.

Unskilled - Labour that requires practically no training or experience for its adequate or competent performance.

3. Would you please comment on your labour turnover. Please express labour turnover in terms of replacement employees as a percentage of average annual full-time employment in recent years. Do not include temporary, part-time or summer help. Also do not include lay-offs.

Unskilled	_____	%
Semi-skilled	_____	%
Skilled	_____	%
All production workers	_____	%
Administrative and Sales Personnel	_____	%

4. (a) Is there a shortage of qualified workers in the area?

Yes _____ No. _____

Unskilled Yes _____ No. _____

Semi-skilled Yes _____ No. _____

Skilled Yes _____ No. _____

Administrative and Sales Personnel Yes _____ No. _____

(b) Please list specific skill categories in which there is a shortage.

5. Other comments on labour and employment.

C. Manufacturing Inputs

1. Please list for 1968 your major raw materials, specify their main source(s), the mode of transport used, and the cost of transport if available. IF THE SOURCE IS WITHIN ONTARIO, PLEASE INDICATE THE CITY IF POSSIBLE. (see next page for examples)

	<u>Input Description</u>	<u>Source(s)</u>	<u>Transport Mode(s)</u>	<u>Transport Cost</u> (dollars or percentages)
(a)	_____	_____	_____	_____
(b)	_____	_____	_____	_____
(c)	_____	_____	_____	_____
(d)	_____	_____	_____	_____
(e)	_____	_____	_____	_____
(f)	_____	_____	_____	_____
(g)	Other _____	_____	_____	_____

Total Transport Costs _____

Examples:

Sheet Metal	Hamilton	rail, hired truck	\$10,000, \$4,000
Bearings	Stratford	own truck	\$2,000
Bearings	Germany	ship, rail	\$4,000, \$1,000
Hardwood Lumber	British Columbia	rail	100%

2. Have your inputs, their source, or the transport mode changed substantially since 1961 or the nearest year for which data are available?

Yes _____ No. _____

If yes, please indicate the appropriate changes for year _____.

	<u>Changes In Inputs</u>	<u>Changes In Source(s)</u>	<u>Changes In Transport Mode</u>
(a) _____	_____	_____	_____
(b) _____	_____	_____	_____
(c) _____	_____	_____	_____
(d) _____	_____	_____	_____
(e) _____	_____	_____	_____
(f) _____	_____	_____	_____
(g) Other _____	_____	_____	_____

D. Manufacturing Outputs

1. Product description - Itemized products should total at least 70% of the total value of production.

	<u>1968 Product Group Identification</u>	<u>% Of Total</u>		<u>1961 Product Group Identification</u>	<u>% Of Total</u>
(a)	_____	_____	(a)	_____	_____
(b)	_____	_____	(b)	_____	_____
(c)	_____	_____	(c)	_____	_____
(d)	_____	_____	(d)	_____	_____
(e)	_____	_____	(e)	_____	_____
(f)	_____	_____	(f)	_____	_____

100%

100%

3. What proportion of the sales of this plant are to:

	1968 PRODUCT GROUP					
	(a)	(b)	(c)	(d)	(e)	(f)
Wholesalers	_____	_____	_____	_____	_____	_____
Retailers	_____	_____	_____	_____	_____	_____
Consumer Directly	_____	_____	_____	_____	_____	_____
Building Contractors	_____	_____	_____	_____	_____	_____
Other Manufacturers	_____	_____	_____	_____	_____	_____
Government	_____	_____	_____	_____	_____	_____
	100%	100%	100%	100%	100%	100%

Note: (a) refers to product group identification of #1 above as does (b), (c), etc.

4. Transport Mode used in Product Distribution to Final Destination Point.

(a) Please state the percentage distribution of transport mode used for product distribution, expressed in terms of volume of shipments.

Mode Of Shipment	Product Group (a)		Product Group (b)		Product Group (c)		Product Group (d)		Product Group (e)		Product Group (f)	
	1968	1961	1968	1961	1968	1961	1968	1961	1968	1961	1968	1961
	%	%	%	%	%	%	%	%	%	%	%	%
Own Truck	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____
Commercial Truck	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____
Rail	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____
Air	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____
Ship	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____
Other	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____	_____
	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

(b) Please state total cost for outward shipping _____

E. Location

1. Given present economic and locational conditions, please check (✓) which of the following factors are (a) favourable, (b) unfavourable, (c) neither favourable nor unfavourable, for the continuing operation of your firm.

Secondly, for the favourable and unfavourable factors, please rank those three to five factors which you deem to be most beneficial and most detrimental to your firm.

	<u>Favourable</u>	<u>Unfavourable</u>	<u>Neither</u>
(a) Proximity to good highways	_____	_____	_____
(b) Proximity to good rail service	_____	_____	_____
(c) Proximity to air services	_____	_____	_____
(d) Proximity to water transportation	_____	_____	_____
(e) Total costs of transportation	_____	_____	_____
(f) Proximity to natural resources	_____	_____	_____
(g) Proximity to sources of manufactured inputs	_____	_____	_____
(h) Proximity to markets (50 mile radius)	_____	_____	_____
(i) Availability of skilled labour	_____	_____	_____
(j) Availability of unskilled labour	_____	_____	_____
(k) Availability of administrative staff	_____	_____	_____
(l) Attitude of and relationship with trade union	_____	_____	_____
(m) Structure and cost of wages	_____	_____	_____
(n) Development of utilities and services:			
Water	_____	_____	_____
Sewage	_____	_____	_____
Electrical power	_____	_____	_____
Land suitable and available for plant	_____	_____	_____
(o) Compatibility of tax structure:			
Local taxes and incentives	_____	_____	_____
Provincial taxes and incentives	_____	_____	_____
Federal taxes and incentives	_____	_____	_____
(p) Availability of local business services	_____	_____	_____
(q) Cultural and recreational services	_____	_____	_____

	<u>Favourable</u>	<u>Unfavourable</u>	<u>Neither</u>
(r) Housing:			
Rental accommodation	_____	_____	_____
Owner accommodation (less than \$15,000)	_____	_____	_____
Owner accommodation (\$15,000 or more)	_____	_____	_____
Ontario Housing Corporation assistance	_____	_____	_____
(s) Other (please specify)	_____	_____	_____

2. How many years has the plant been in operation at this location? _____

3. To the best of your ability, please indicate the years in which physical plant expansion was completed to allow major increases in output.

4. (a) Would you under present economic and operating conditions locate (a) in the same area Yes _____ No. _____; or (b) within a 100 mile radius Yes _____ No. _____, if you had the option of relocating at this time.

(b) Please state why and which other location would be preferable.

5. (a) If the operation of your firm requires the disposition of liquid, solid or gaseous wastes, how are they disposed?

(b) Do you have any plans for further pollution control?

F. Future Changes

1. Do you anticipate significant changes in the number of employees, plant size, or output of your establishment in (a) the short-term period (1970 - 1972) or, (b) the long-term period (1972 - 1981).

	SHORT-TERM			LONG-TERM		
	<u>Plant Size</u>	<u>Output</u>	<u>Employment</u>	<u>Plant Size</u>	<u>Output</u>	<u>Employment</u>
(a) Increase	_____	_____	_____	_____	_____	_____
(b) Decrease	_____	_____	_____	_____	_____	_____
(c) Stable	_____	_____	_____	_____	_____	_____
(d) Not Known	_____	_____	_____	_____	_____	_____

If possible, please indicate the approximate number of employees involved if an increase or decline is indicated.

Please indicate the number of acres presently occupied by your firm. _____

If an expansion is contemplated, how many additional acres will be required. _____

2. If either an increase or decrease is indicated above in the number of employees, will the need be for:

Increase Decrease Not Known
 (please check one line for each type of employment)

(a) Managerial or professional personnel	_____	_____	_____
(b) Clerical and other office staff	_____	_____	_____
(c) Skilled and semi-skilled production workers	_____	_____	_____
(d) Unskilled production workers	_____	_____	_____

3. If an increase in capacity or output is indicated, could the change be ascribed to: (please rank the first three factors you think may apply and check others which may be applicable.)

	<u>Rank</u>
(a) Mechanization and technological advance	_____
(b) Greater accessibility to resources and other input materials	_____
(c) Cheaper transport costs	_____
(d) Expanding market within:	
1. Niagara Region (Brant, Haldimand, Lincoln, Welland, Wentworth, and Norfolk Counties)	_____
2. Elsewhere in Southern Ontario	_____
3. Elsewhere in Canada	_____
4. Foreign	_____

	<u>Rank</u>
(e) Higher level of skill in the labour force	_____
(f) Possible government incentives or subsidies	_____
(g) More favourable tax structure	_____
(h) Increasing public and private investment	_____
(i) Proximity to related industry	_____
(j) Other (please specify) _____	_____
_____	_____
_____	_____

4. If a possible decrease in capacity or output is indicated, could the change be ascribed to: (please rank the first three factors you think may apply, and check others which may be applicable.

	<u>Rank</u>
(a) Increasing costs of resources and other input materials	_____
(b) Increasing costs of transportation	_____
(c) Increasing wages and salaries	_____
(d) Increasing taxes	_____
(e) Increasing costs of suitable land	_____
(f) Increasing costs of fuel and power	_____
(g) Shortage of skilled labour or professional personnel	_____
(h) Lack of adequate services and utilities	_____
(i) Declining competitive position owing to distance from major markets	_____
(j) Declining demand for product	_____
(k) Lack of private and public investment	_____
(l) Other _____	_____
_____	_____
_____	_____

5. If your plant anticipates future expansion, will you need additional utilities such as power, roads, waste disposal, etc?

Please state what your future needs will be.

APPENDIX 8

STATISTICAL APPENDIX

STATISTICAL APPENDIX

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TABLE 1 a

POPULATION DISTRIBUTION BY AGE GROUPS, COUNTIES, NIAGARA REGION, 1951, 1961 AND 1966

		TOTAL			0-4				5-14					
					NUMBER		% CHANGE		NUMBER		% CHANGE			
		1951 (1)	1961 (2)	1966 (3)	1951 (4)	1961 (5)	1966 (6)	1966/1951 (7)	1966/1961 (8)	1951 (9)	1961 (10)	1966 (11)	1966/1951 (12)	1966/1961 (13)
BRANT	No.	72,857 100.0	83,839 100.0	90,945 100.0	8,622 11.8	9,002 10.7	9,559 10.5	10.9	6.2	11,688 16.1	17,564 21.0	18,765 20.6	60.0	6.5
HALDIMAND	No.	24,138 100.0	28,197 100.0	30,020 100.0	2,836 11.8	3,199 11.4	3,262 10.9	15.0	2.0	4,225 17.5	6,202 22.0	6,750 22.5	59.8	8.8
LINCOLN	No.	89,366 100.0	126,674 100.0	146,099 100.0	10,078 11.3	14,495 11.4	15,530 10.6	54.1	7.1	14,626 16.4	26,680 21.1	31,094 21.3	112.6	16.5
WELLAND	No.	123,233 100.0	164,741 100.0	178,818 100.0	14,394 11.7	19,090 11.6	18,580 10.4	29.1	-2.7	20,546 16.7	35,639 21.6	38,547 21.5	87.6	8.2
WENTWORTH	No.	266,083 100.0	358,837 100.0	394,299 100.0	28,586 10.7	41,790 11.7	40,390 10.2	41.2	-3.4	38,392 14.4	70,454 19.6	79,678 20.2	107.5	13.1
TOTAL, NIAGARA REGION	No.	575,677 100.0	762,288 100.0	840,181 100.0	64,526 11.2	87,576 11.5	87,321 10.4	35.3	-0.3	89,477 13.5	156,539 20.5	174,774 20.8	95.3	11.6
NORFOLK	No.	42,708 100.0	50,475 100.0	50,578 100.0	4,811 11.3	5,665 11.2	5,115 10.1	6.3	-9.7	7,755 18.2	10,567 20.9	10,726 21.2	38.3	1.5
TOTAL, NIAGARA REGION INCLUDING NORFOLK	No.	618,385 100.0	812,763 100.0	890,759 100.0	69,337 11.2	93,241 11.5	92,436 10.4	33.3	-0.9	97,232 15.7	167,106 20.6	185,500 20.8	90.8	11.0
TOTAL, PROVINCE OF ONTARIO	No.	4,597,542 100.0	6,236,092 100.0	6,960,870 100.0	514,722 11.2	740,193 11.9	745,744 10.7	44.9	0.7	724,592 15.8	1,267,556 20.3	1,458,331 21.0	101.3	15.1

(1)Wentworth County total does not include that part of Burlington that is in Halton County.

Source: Canada, Dominion Bureau of Statistics, Census of Canada, Population, 1951, 1961 and 1966 (Ottawa: Queen's Printer), Table 23, (1951), Bulletin SP-1 (92-525), (1961), and Bulletin S-2, (92-632).

TABLE 1. a

POPULATION DISTRIBUTION BY AGE GROUPS, COUNTIES, NIAGARA REGION, 1951, 1961 AND 1966 (Cont'd.)

		15-19					20-24					25-24				
		NUMBER		CHANGE			NUMBER		% CHANGE			NUMBER		CHANGE		
		1951 (15)	1961 (16)	1966/1951 (17)	1966/1961 (18)		1951 (19)	1961 (20)	1966/1951 (21)	1966/1961 (22)		1951 (24)	1961 (25)	1966/1951 (26)	1966/1961 (27)	
BRANT	No.	4,874 6.7	6,267 7.5	8,448 9.3	73.3	34.8	5,419 7.4	4,901 5.8	6,176 6.8	14.0	26.0	21,513 29.5	21,390 25.5	21,316 23.4	-0.9	-0.3
HALDIMAND	No.	1,636 6.8	2,266 8.0	2,719 9.1	66.2	20.0	1,594 6.6	1,487 5.3	1,878 6.2	17.8	26.3	6,301 26.1	6,496 23.0	6,472 21.6	2.7	-0.4
LINCOLN	No.	6,056 6.8	9,266 7.3	12,730 8.7	110.2	37.4	6,522 7.3	7,248 5.7	10,051 6.9	54.1	38.7	27,281 30.5	34,710 27.4	37,329 25.5	36.8	7.5
WELLAND	No.	8,447 6.8	12,136 7.4	16,486 9.2	95.2	35.8	9,704 7.9	9,386 5.7	11,951 6.7	23.2	27.3	37,606 30.5	45,875 27.8	45,573 25.5	21.2	-0.7
WENTWORTH (1)	No.	16,746 6.3	23,931 6.7	33,002 8.4	97.1	37.9	21,418 8.1	21,271 5.9	28,705 7.3	34.0	34.9	84,578 31.8	104,811 29.2	105,671 26.8	24.9	0.8
TOTAL, NIAGARA REGION	No.	37,759 6.6	53,866 7.1	73,385 8.7	94.4	36.2	44,657 7.7	44,293 5.8	58,761 7.0	31.6	32.7	177,279 30.8	213,282 28.0	216,361 25.8	22.0	1.4
NORFOLK	No.	3,303 7.7	4,052 8.0	4,679 9.3	41.7	15.5	3,077 7.2	3,246 6.4	3,144 6.2	2.2	-3.2	11,523 27.0	12,366 24.5	11,737 23.2	1.9	-5.1
TOTAL, NIAGARA REGION INCLUDING NORFOLK	No.	41,062 6.7	57,918 7.1	78,064 8.8	90.1	34.8	47,734 7.7	47,539 5.8	61,905 6.9	29.7	30.2	188,802 30.5	225,648 27.8	228,098 25.6	20.8	1.1
TOTAL, PROVINCE OF ONTARIO	No.	315,685 6.9	436,883 7.0	599,197 8.6	89.8	37.2	352,360 7.7	386,966 6.2	485,053 7.0	37.7	25.3	1,381,421 30.0	1,749,039 28.1	1,822,985 26.2	32.0	4.2

TABLE 1 a

POPULATION DISTRIBUTION BY AGE GROUPS, COUNTIES, NIAGARA REGION, 1951, 1961 AND 1966 (Cont'd.)

		45-64				65 AND OVER					
		NUMBER		% CHANGE		NUMBER		CHANGE			
		1951 (29)	1961 (30)	1966 (31)	1966/1951 (32)	1966/1961 (33)	1951 (34)	1961 (35)	1966 (36)	1966/1951 (37)	1966/1961 (38)
BRANT	No.	13,986 19.2	16,573 19.8	17,987 19.8	28.6	8.5	6,755 9.3	8,142 9.7	8,754 9.6	29.6	7.5
HALDIMAND	No. %	4,855 20.1	5,501 19.5	5,772 19.2	18.9	4.9	2,691 11.1	3,046 10.8	3,167 10.5	17.7	4.0
LINCOLN	No.	17,699 19.8	23,884 18.9	27,420 18.8	54.9	14.8	7,104 7.9	10,391 8.2	11,945 8.2	68.1	15.0
WELLAND	No.	23,932 19.4	30,089 18.3	33,222 18.6	38.8	10.4	8,604 7.0	12,526 7.6	14,459 8.1	68.0	15.4
WENTWORTH (1)	No.	53,852 20.2	67,507 18.8	74,486 18.9	38.3	10.3	22,501 8.5	29,073 8.1	32,367 8.2	43.8	11.3
TOTAL, NIAGARA REGION	No.	114,324 19.9	143,554 18.8	158,887 18.9	39.0	10.7	47,655 8.3	63,178 8.3	70,692 8.4	48.3	11.9
NORFOLK	No. %	8,632 20.2	10,214 20.3	10,115 20.0	17.2	-1.0	3,607 8.4	4,365 8.7	5,062 10.0	40.3	16.0
TOTAL, NIAGARA REGION INCLUDING NORFOLK	No. %	122,956 19.9	153,768 18.9	169,002 19.0	37.4	9.9	51,262 8.3	67,543 8.3	75,754 8.5	47.8	12.
TOTAL, PROVINCE OF ONTARIO	No. %	908,399 19.7	1,147,382 18.4	1,281,838 18.4	41.1	11.7	400,363 8.7	508,073 8.1	567,722 8.1	41.8	11

POPULATION DISTRIBUTION BY AGE GROUPS, INCORPORATED MUNICIPALITIES, BRANT COUNTY, 1951, 1961 AND 1966

Source: Canada, Dominion Bureau of Statistics, Census of Canada, Population, 1951, 1961 and 1966 (Ottawa: Queen's Printer), Table 23, (1951), Bulletin SP-1 (92-525), (1961), and Bulletin S-2, (92-632).

TABLE 1.2

POPULATION DISTRIBUTION BY AGE GROUPS, INCORPORATED MUNICIPALITIES, BRANT COUNTY, 1951, 1961 AND 1966 (Cont'd.)

		15-19				20-24				25-24				
		NUMBER		CHANGE		NUMBER		CHANGE		NUMBER		CHANGE		
		1951 (1)	1961 (15)	1966 (16)	1966/1951 (17)	1951 (19)	1961 (20)	1966 (21)	1966/1951 (22)	1951 (24)	1961 (25)	1966 (26)	1966/1951 (27)	1966/1961 (28)
CITIES														
Brantford	No. %	2,440 6.6	3,967 7.2	5,471 9.1	124.2	3,071 8.4	3,319 6.0	4,360 7.3	42.0	10,995 29.9	14,377 26.1	14,187 23.7	29.0	-1.3
TOWNS														
Paris	No. %	343 6.5	440 7.6	564 9.0	64.4	358 6.8	315 5.4	404 6.4	12.8	1,497 28.5	1,408 24.2	1,320 21.6	-11.8	-6.3
TOWNSHIPS														
Brantford	No. %	1,098 6.3	578 7.4	868 9.6	-20.9	1,149 6.5	425 5.5	464 5.1	-59.6	5,660 32.2	2,212 28.5	2,398 26.5	-57.6	8.4
Burford	No. %	338 7.1	457 8.3	581 10.3	71.9	299 6.3	307 5.6	347 6.2	16.1	1,284 26.9	1,322 24.1	1,274 22.6	-0.8	-3.6
Dumfries, South	No. %	238 7.6	270 8.3	308 8.7	29.4	206 6.6	174 5.4	212 6.0	2.9	806 25.8	776 23.9	810 22.8	0.5	-4.4
Oakland	No. %	78 6.7	105 7.9	114 8.5	46.2	73 6.2	76 5.8	88 6.6	20.5	325 27.8	319 24.1	306 22.9	-5.8	-4.1
Onondaga	No. %	79 6.8	105 8.8	116 9.4	46.8	73 6.2	57 4.8	60 4.8	-17.8	325 27.8	280 23.3	296 23.9	-8.9	5.7
Indian Reserves	No. %	260 8.5	345 9.1	426 10.6	63.8	190 6.2	228 6.0	241 6.0	26.8	621 20.3	696 18.3	725 18.1	16.7	-4.2
TOTAL, BRANT COUNTY	No. %	4,874 6.7	6,267 7.5	8,448 9.3	73.3	5,419 7.4	4,901 5.8	6,176 6.8	14.0	21,513 29.5	21,390 25.5	21,316 23.4	-0.9	-0.3

TABLE 1. b

POPULATION DISTRIBUTION BY AGE GROUPS, INCORPORATED MUNICIPALITIES, BRANT COUNTY, 1951, 1961 AND 1966 (Cont'd.)

		45-64				65 AND OVER					
		NUMBER		CHANGE		NUMBER		CHANGE			
		1951 (29)	1961 (30)	1966 (31)	1966/1951 (32)	1966/1951 (33)	1951 (34)	1961 (35)	1966 (36)	1966/1951 (37)	1966/1961 (38)
CITIES											
	No.	7,504	11,222	12,057	60.7	7.4	3,726	5,587	6,066	62.8	8.6
	%	20.4	20.3	20.2			10.2	10.1	10.1		
TOWNS											
	No.	1,097	1,194	1,373	25.2	15.0	596	734	832	39.6	13.4
	%	20.9	20.5	21.9			11.4	12.6	13.3		
TOWNSHIPS											
	No.	2,921	1,481	1,700	-39.7	18.8	1,198	469	495	-58.7	5.5
	%	16.6	19.1	19.4			6.8	6.0	5.5		
	No.	956	985	1,043	9.1	5.9	466	473	504	8.2	6.6
	%	20.0	17.9	18.5			9.7	8.6	9.0		
	No.	626	682	734	17.3	7.6	340	369	335	-1.5	-9.2
	%	20.1	21.0	20.7			10.9	11.4	9.4		
	No.	227	250	260	14.5	4.0	107	137	129	20.6	-5.8
	%	19.4	18.9	19.5			9.2	10.4	9.6		
	No.	205	259	271	32.2	4.6	102	96	84	-17.6	-12.5
	%	17.6	21.6	21.9			8.7	8.0	6.8		
	No.	450	500	489	8.7	-2.2	220	277	309	40.5	11.6
	%	14.7	13.2	12.2			7.2	7.3	7.7		
TOTAL, BRANT COUNTY											
	No.	13,986	16,573	17,987	28.6	8.5	6,755	8,142	8,754	29.6	7.5
	%	19.2	19.8	19.8			9.3	9.7	9.6		

TABLE 1.c

POPULATION DISTRIBUTION BY AGE GROUPS, INCORPORATED MUNICIPALITIES, HALDIMAND COUNTY, 1951, 1961 AND 1966

		0-4				5-14									
		TOTAL		NUMBER		% CHANGE		NUMBER		CHANGE					
		1951 (1)	1961 (2)	1966 (3)	1951 (4)	1961 (5)	1966 (6)	1966/1951 (7)	1966/1961 (8)	1951 (9)	1961 (10)	1966 (11)	1966/1961 (12)	1966/1961 (13)	
TOWNS															
Caledonia	No.	1,681	2,198	2,725	198	235	322	62.6	37.0	251	458	578	130.3	26.2	
	%	100.0	100.0	100.0	11.8	10.7	11.8			14.9	20.8	21.2			
Dunnville	No.	4,478	5,181	5,402	464	536	498	7.3	-7.1	635	920	969	52.6	5.3	
	%	100.0	100.0	100.0	10.4	10.3	9.2			14.2	17.8	17.9			
VILLAGES															
Cayuga	No.	719	897	1,031	89	99	123	38.2	24.2	124	200	199	60.5	-0.5	
	%	100.0	100.0	100.0	12.4	11.1	11.9			17.2	22.3	19.3			
Hagersville	No.	1,746	2,075	2,169	214	232	236	10.3	1.7	273	431	428	56.8	-0.7	
	%	100.0	100.0	100.0	12.3	11.2	10.9			15.6	20.8	19.7			
Jarvis	No.	652	783	824	91	116	88	-3.3	-24.1	96	152	197	105.2	29.0	
	%	100.0	100.0	100.0	14.0	14.8	10.7			14.7	19.4	23.9			
TOWNSHIPS															
Canborough	No.	971	1,114	1,263	110	130	162	47.3	24.6	198	252	319	61.1	26.6	
	%	100.0	100.0	100.0	11.3	11.7	12.8			20.4	22.6	25.3			
Cayuga, North	No.	1,369	1,525	1,540	140	139	149	6.4	7.2	270	334	371	37.4	4.8	
	%	100.0	100.0	100.0	10.2	9.1	9.7			19.7	23.2	24.1			
Cayuga, South	No.	626	587	637	57	55	66	15.8	20.0	120	109	142	18.3	30.3	
	%	100.0	100.0	100.0	9.1	9.4	10.4			19.2	18.6	22.3			
Dunn	No.	820	1,055	1,196	96	97	126	31.3	29.9	163	260	264	62.0	1.5	
	%	100.0	100.0	100.0	11.7	9.2	10.5			19.9	24.6	22.1			
Moulton	No.	1,871	2,160	2,403	185	253	273	47.6	7.9	375	460	567	51.2	23.3	
	%	100.0	100.0	100.0	9.9	11.7	11.4			20.0	21.3	23.6			
Oneida	No.	1,255	1,542	1,630	141	200	174	23.4	-13.0	211	373	429	103.3	15.0	
	%	100.0	100.0	100.0	11.2	13.0	10.7			16.8	24.2	26.3			
Rainham	No.	1,563	1,790	1,835	175	190	175	-	-7.9	273	382	386	41.4	1.0	
	%	100.0	100.0	100.0	11.2	10.6	9.5			17.5	21.3	21.0			
Seneca	No.	1,762	2,086	2,253	238	241	280	17.6	16.2	319	516	557	74.6	7.9	
	%	100.0	100.0	100.0	13.5	11.6	12.4			18.1	24.7	24.7			
Sherbrooke	No.	385	375	404	47	38	50	6.4	31.6	76	74	90	18.4	21.6	
	%	100.0	100.0	100.0	12.2	10.2	12.4			19.7	19.7	22.3			
Walpole	No.	3,650	4,083	3,947	479	510	432	-9.8	-15.3	685	1,031	1,002	46.3	-2.8	
	%	100.0	100.0	100.0	13.1	12.5	10.9			18.8	25.2	25.4			
Indian Reserves	No.	590	746	761	112	128	108	-3.6	-15.6	156	230	252	61.5	9.6	
	%	100.0	100.0	100.0	19.0	17.2	14.2			26.4	30.8	33.1			
TOTAL, HALDIMAND COUNTY															
	No.	24,138	28,197	30,020	2,836	3,199	3,262	15.0	2.0	4,225	6,202	6,750	59.8	8.8	
	%	100.0	100.0	100.0	11.8	11.4	10.9			17.5	22.0	22.5			

- Nil

Source: Canada, Dominion Bureau of Statistics, Census of Canada, Population, 1951, 1961 and 1966 (Ottawa: Queen's Printer), Table 23, (1951), Bulletin SP-1 (92-525), (1961), and Bulletin S-2, (92-632).

TABLE 1. c

POPULATION DISTRIBUTION BY AGE GROUPS, INCORPORATED MUNICIPALITIES, HALDIMAND COUNTY, 1951, 1961 AND 1966 (Cont'd.)

		15-19				20-24				25-44						
		NUMBER		% CHANGE		NUMBER		% CHANGE		NUMBER		% CHANGE				
		1951 (14)	1961 (15)	1966 (16)	1966/1951 (17)	1966/1951 (18)	1951 (19)	1961 (20)	1966 (21)	1966/1951 (22)	1966/1951 (23)	1951 (24)	1961 (25)	1966 (26)	1966/1951 (27)	1966/1951 (28)
TOWNS																
Caledonia	No.	114	159	230	101.8	44.7	93	122	173	86.0	41.8	460	490	602	30.9	22.9
	%	6.8	7.2	8.4			5.5	5.6	6.4			27.4	22.3	22.1		
Dunnville	No.	335	363	476	42.1	31.1	359	327	408	13.6	24.8	1,188	1,249	1,175	-1.1	-5.9
	%	7.5	7.0	8.8			8.0	6.3	7.6			26.5	24.1	21.7		
VILLAGES																
Cayuga	No.	36	64	93	158.3	45.3	43	51	73	69.8	-3.1	194	194	226	16.5	16.5
	%	5.0	7.1	9.0			6.0	5.7	7.1			27.0	21.6	21.9		
Hagersville	No.	90	169	187	107.8	10.7	132	120	163	23.5	35.8	491	499	476	-3.1	-4.6
	%	5.2	8.1	8.6			7.6	5.8	7.5			28.1	24.0	21.9		
Jarvis	No.	31	57	68	119.4	19.3	43	-6	35	-18.6	-23.9	169	160	161	-4.7	0.6
	%	4.7	7.3	8.3			6.6	5.9	4.2			25.9	20.4	19.5		
TOWNSHIPS																
Canborough	No.	78	85	102	30.8	20.0	47	68	60	27.7	-11.8	236	233	283	19.9	21.5
	%	8.0	7.6	8.1			4.9	6.1	4.7			24.3	20.9	22.4		
Cayuga, North	No.	86	140	165	91.9	17.9	81	64	73	-9.9	14.1	314	330	309	-1.6	-9.2
	%	6.3	9.2	10.7			5.9	4.2	4.7			22.9	21.6	20.1		
Cayuga, South	No.	46	62	61	32.6	-1.6	53	32	40	-24.5	25.0	138	128	148	7.2	15.6
	%	7.4	10.6	9.6			8.5	5.4	6.3			22.0	21.8	23.2		
Dunn	No.	46	92	127	176.1	38.0	46	44	81	76.1	84.1	232	265	254	9.5	-4.2
	%	5.6	8.7	10.6			5.6	4.2	6.8			28.3	25.1	21.2		
Moulton	No.	148	182	204	37.8	12.1	132	121	147	11.4	21.5	434	503	536	23.5	6.6
	%	7.9	8.4	8.5			7.1	5.6	6.1			23.2	23.3	22.3		
Oneida	No.	99	108	164	65.7	51.9	80	71	81	1.3	14.1	355	383	335	-5.6	-12.5
	%	7.9	7.0	10.1			6.4	4.6	5.0			28.3	24.8	20.5		
Rainham	No.	105	154	168	60.0	9.1	85	91	111	30.6	22.0	410	399	392	-4.4	-1.8
	%	6.7	8.6	9.2			5.5	5.1	6.0			26.2	22.3	21.4		
Seneca	No.	104	176	223	114.4	26.7	113	87	128	13.3	47.1	472	524	519	10.0	-1.0
	%	5.9	8.4	9.9			6.4	4.2	5.7			26.8	25.1	23.0		
Sherbrooke	No.	33	42	38	15.2	-9.5	25	25	23	-8.0	-8.0	93	74	87	-6.5	17.6
	%	8.6	11.2	9.4			6.5	6.7	5.7			24.1	19.7	21.5		
Walpole	No.	243	338	340	39.9	0.6	238	175	227	-4.6	29.7	980	933	835	-14.8	-10.5
	%	6.7	8.3	8.6			6.5	4.3	5.8			26.8	22.8	21.2		
Indian Reserves	No.	42	75	73	73.8	-2.7	24	43	55	129.2	27.9	135	132	134	-0.7	1.5
	%	7.1	10.0	9.6			4.1	5.8	7.2			22.9	17.7	17.6		
TOTAL, HALDIMAND COUNTY																
	No.	1,636	2,266	2,719	66.2	20.0	1,594	1,487	1,878	17.8	26.3	6,301	6,496	6,472	2.7	-0.4
	%	6.8	8.0	9.1			6.6	5.3	6.2			26.1	23.0	21.6		

TABLE 1. c

POPULATION DISTRIBUTION BY AGE GROUPS, INCORPORATED MUNICIPALITIES, HALDIMAND COUNTY, 1951, 1961 AND 1966 (Cont'd.)

		45-64					65 AND OVER				
		NUMBER		% CHANGE			NUMBER		% CHANGE		
		1951 (29)	1961 (30)	1966 (31)	1966/1951 (32)	1966/1961 (33)	1951 (34)	1961 (35)	1966 (36)	1966/1951 (37)	1966/1961 (38)
TOWNS											
Caledonia	No.	359	446	504	40.4	13.0	206	288	316	53.4	9.7
	%	21.4	20.3	18.5			12.2	13.1	11.6		
	No.	946	1,071	1,106	16.9	3.3	551	715	770	39.7	7.7
Dunnville	%	21.1	20.7	20.5			12.3	13.8	14.3		
VILLAGES											
Cayuga	No.	154	199	207	34.4	4.0	79	90	110	39.2	22.2
	%	21.4	22.2	20.1			11.0	10.0	10.7		
	No.	336	390	411	22.3	5.4	210	234	268	27.6	14.5
Hagersville	%	19.2	18.8	19.0			12.0	11.3	12.4		
Jarvis	No.	127	163	158	24.4	-3.1	95	89	117	23.2	31.5
	%	19.5	20.8	19.2			14.6	11.4	14.2		
TOWNSHIPS											
Canborough	No.	204	234	232	13.7	-0.9	98	112	105	7.1	-6.3
	%	21.0	21.0	18.4			10.1	10.1	8.3		
	No.	291	320	315	8.2	-1.6	187	178	158	-15.5	-11.2
Cayuga, North	%	21.3	21.0	20.4			13.7	11.7	10.3		
Cayuga, South	No.	143	131	118	-17.5	-9.9	69	70	62	-10.1	-11.4
	%	22.8	22.3	18.5			11.0	11.9	9.7		
	No.	141	197	249	76.6	26.4	96	100	95	-1.0	-5.0
Dunn	%	17.2	18.7	20.8			11.7	9.5	8.0		
Moulton	No.	435	423	447	2.8	5.7	162	218	229	41.4	5.0
	%	23.2	19.6	18.6			8.7	10.1	9.5		
	No.	227	282	337	48.5	19.5	142	125	110	-22.5	-12.0
Oneida	%	18.1	18.3	20.7			11.3	8.1	6.7		
Rainham	No.	335	359	379	13.1	5.6	180	215	224	24.4	4.2
	%	21.4	20.1	20.7			11.5	12.0	12.2		
	No.	330	378	384	16.4	1.6	186	164	162	-12.9	-1.2
Seneca	%	18.7	18.1	17.1			10.6	7.9	7.2		
Sherbrooke	No.	73	83	82	12.3	-1.2	38	39	34	-10.5	-12.8
	%	19.0	22.1	20.3			9.9	10.4	8.4		
	No.	679	742	744	9.6	0.3	346	354	367	6.1	3.7
Walpole	%	18.6	18.2	18.8			9.5	8.7	9.3		
Indian Reserves	No.	75	83	99	32.0	19.3	46	55	40	-13.0	-27.3
	%	12.7	11.1	13.0			7.8	7.4	5.3		
TOTAL, HALDIMAND COUNTY											
	No.	4,855	5,501	5,772	18.9	4.9	2,691	3,046	3,167	17.7	4.0
	%	20.1	19.5	19.2			11.1	10.8	10.5		

POPULATION DISTRIBUTION BY AGE GROUPS, INCORPORATED MUNICIPALITIES, LINCOLN COUNTY, 1951, 1961 AND 1966

- Nil

Source: Canada, Dominion Bureau of Statistics, Census of Canada, Population, 1951, 1961 and 1966 (Ottawa: Queen's Printer), Table 23, (1951), Bulletin SP-1 (92-525), (1961), and Bulletin S-2, (92-632).

TABLE 1.1

POPULATION DISTRIBUTION BY AGE GROUPS, INCORPORATED MUNICIPALITIES, LINCOLN COUNTY, 1951, 1961 AND 1966 (Cont'd.)

	15-19					20-24					25-34					CHANGE		
	NUMBER		CHANGE			NUMBER		CHANGE			NUMBER		CHANGE					
	1951 (14)	1961 (15)	1966 (16)	1966/1951 (17)	1966/1961 (18)	1951 (19)	1961 (20)	1966 (21)	1966/1951 (22)	1966/1961 (23)	1951 (24)	1961 (25)	1966 (26)	1966/1951 (27)	1966/1961 (28)			
VILLES																		
St. Catharines	No. 2,556 6.7	6,044 7.1	8,400 8.7	228.6	39.0	2,900 7.6	4,927 5.8	7,114 7.3	145.3	44.4	12,007 31.6	24,115 28.6	25,359 26.1	111.2	5.1			
TOWNS																		
Beamsville	No. 104 6.1	195 7.7	360 9.3	246.2	84.6	124 7.3	160 6.3	275 7.1	121.8	71.9	456 26.6	601 23.7	945 24.3	107.2	57.2			
Grimsbv	No. 195 7.0	310 6.0	519 7.8	166.2	67.4	154 5.6	279 5.4	370 5.6	140.3	32.6	722 26.0	1,304 25.3	1,708 25.7	136.6	31.0			
Merriton	No. 284 6.0	-	-	-	-	360 7.6	-	-	-	-	1,527 32.4	-	-	-	-			
Niagara	No. 107 5.1	205 7.5	324 10.4	202.8	58.0	136 6.5	105 3.9	207 6.7	52.2	97.1	593 28.1	670 24.7	688 22.1	16.0	2.7			
Port Dalhousie	No. 177 6.8	-	-	-	-	185 7.1	-	-	-	-	830 31.7	-	-	-	-			
TOWNSHIPS																		
Caistor	No. 84 6.2	151 9.0	156 8.6	85.7	3.3	79 5.8	76 4.6	102 5.6	29.1	34.2	349 25.7	422 25.3	431 23.6	23.5	2.1			
Clinton	No. 350 8.6	468 8.0	491 8.5	40.3	4.9	269 6.6	337 5.8	384 6.6	42.8	13.9	1,054 25.9	1,454 23.0	1,345 23.1	27.6	-7.5			
Gainsborough	No. 182 7.8	217 8.6	274 9.6	50.5	26.3	137 5.8	149 5.9	163 5.7	19.0	9.4	557 23.8	536 21.2	623 21.9	11.8	16.2			
Grantham	No. 915 5.9	-	-	-	-	1,170 7.6	-	-	-	-	5,292 34.3	-	-	-	-			
Grimsbv, North	No. 211 7.1	358 6.2	554 7.7	162.6	54.7	169 5.7	308 5.3	376 5.2	122.5	22.1	814 27.4	1,581 27.5	1,902 26.5	133.7	20.3			
Grimsbv, South	No. 135 7.8	183 7.9	231 8.7	71.1	26.2	105 6.1	126 5.4	164 6.1	56.2	30.2	451 26.1	569 24.5	639 23.9	41.7	12.3			
Louth	No. 337 7.5	440 8.7	503 8.9	49.3	14.3	338 7.6	317 6.2	336 5.9	-0.6	6.0	1,254 28.0	1,289 25.3	1,388 24.4	10.7	7.7			
Niagara	No. 419 8.2	695 8.1	918 9.8	119.1	32.1	396 7.8	464 5.4	560 6.0	41.4	20.7	1,375 27.0	2,149 24.9	2,301 24.6	67.3	7.1			
TOTAL, LINCOLN COUNTY	No. 6,056 6.8	9,266 7.3	12,730 8.7	110.2	37.4	6,522 7.3	7,248 5.7	10,051 6.9	54.1	38.7	27,281 30.5	34,710 27.4	37,329 25.5	36.8	7.5			

TABLE 1. d

POPULATION DISTRIBUTION BY AGE GROUPS, INCORPORATED MUNICIPALITIES, LINCOLN COUNTY, 1951, 1961 AND 1966 (Cont'd.)

		45-64				65 AND OVER					
		NUMBER		% CHANGE		NUMBER		% CHANGE			
		1951 (29)	1961 (30)	1966 (31)	1966/1951 (32)	1966/1951 (33)	1951 (34)	1961 (35)	1966 (36)	1966/1951 (37)	1966/1961 (38)
CITIES											
St. Catharines	No. %	7,984 21.0	15,792 18.7	18,553 19.1	132.4	17.5	3,177 8.4	6,501 7.7	7,592 7.8	139.0	16.8
TOWNS											
Beamsville	No. %	366 21.4	500 19.7	634 16.3	73.2	26.8	225 13.1	291 11.5	432 11.1	92.0	48.5
Grimsby	No. %	654 23.6	926 18.0	1,075 16.2	64.4	16.1	402 14.5	626 12.2	717 10.8	78.4	14.5
Merritton	No. %	800 17.0	-	-	-	-	295 6.3	-	-	-	-
Niagara	No. %	433 20.5	504 18.6	623 20.0	43.9	23.6	244 11.6	300 11.1	327 10.5	34.0	9.0
Port Dalhousie	No. %	473 18.1	-	-	-	-	186 7.1	-	-	-	-
TOWNSHIPS											
Caistor	No. %	299 22.1	292 17.5	312 17.1	4.3	6.8	148 10.9	149 8.9	146 8.0	-1.4	-2.0
Clinton	No. %	909 22.3	1,233 21.2	1,182 20.3	30.0	-4.1	354 8.7	584 10.0	612 10.5	72.9	4.8
Gainsborough	No. %	528 22.5	510 20.1	500 17.5	-5.3	-2.0	211 9.0	222 8.8	248 8.7	17.5	11.7
Grantham	No. %	2,305 15.0	-	-	-	-	722 4.7	-	-	-	-
Grimsby, North	No. %	674 22.7	989 17.2	1,233 17.2	82.9	24.7	292 9.8	513 8.9	562 7.8	92.5	9.6
Grimsby, South	No. %	362 21.0	452 19.5	450 16.9	24.3	-0.4	198 11.5	224 9.7	269 10.1	35.9	20.1
Louth	No. %	864 19.3	996 19.6	1,113 19.6	28.8	11.7	357 8.0	389 7.6	423 7.4	18.5	8.7
Niagara	No. %	1,048 20.5	1,690 19.6	1,745 18.7	66.5	3.3	293 5.7	592 6.9	617 6.6	110.6	4.2
TOTAL, LINCOLN COUNTY											
	No.	17,699 19.8	23,884 18.9	27,420 18.8	54.9	14.8	7,104 7.9	10,391 8.2	11,945 8.2	68.1	15.0

TABLE 1 e

POPULATION DISTRIBUTION BY AGE GROUPS, INCORPORATED MUNICIPALITIES, WELLAND COUNTY, 1951, 1961 AND 1966

		0-4				5-14								
		TOTAL		NUMBER		% CHANGE		NUMBER						
		1951 (1)	1961 (2)	1966 (3)	1951 (4)	1961 (5)	1966 (6)	1966/1951 (7)	1966/1961 (8)	1951 (9)	1961 (10)	1966 (11)	1966/1951 (12)	1966/1961 (13)
CITIES														
Niagara Falls	No.	22,874	22,351	56,891	2,208	2,028	5,673	156.9	179.7	3,054	3,873	11,811	286.7	205.0
	%	100.0	100.0	100.0	9.7	9.1	10.0			13.4	17.3	20.7		
Port Colborne	No.	8,275	14,886	17,986	914	1,784	1,733	89.6	-2.9	1,296	3,053	4,040	211.7	32.3
	%	100.0	100.0	100.0	11.0	12.0	9.6			15.7	20.5	22.5		
Welland	No.	15,382	36,079	39,960	1,618	4,161	4,217	160.6	1.3	2,442	7,845	8,368	242.7	6.7
	%	100.0	100.0	100.0	10.5	11.5	10.6			15.9	21.7	20.9		
TOWNS														
Fort Erie	No.	7,572	9,027	9,793	845	891	958	13.4	7.5	1,231	1,832	1,952	58.6	6.6
	%	100.0	100.0	100.0	11.2	9.9	9.8			16.3	20.3	19.9		
Thorold	No.	6,397	8,633	8,843	695	1,021	857	23.3	-16.1	910	1,810	1,868	105.3	3.2
	%	100.0	100.0	100.0	10.9	11.8	9.7			14.2	21.0	21.1		
VILLAGES														
Chippawa	No.	1,762	3,256	3,877	205	448	478	133.2	6.7	278	716	885	218.3	23.6
	%	100.0	100.0	100.0	11.6	13.8	12.3			15.8	22.0	22.8		
Crystal Beach	No.	1,204	1,886	1,857	131	220	189	44.3	-14.1	206	412	397	92.7	-3.6
	%	100.0	100.0	100.0	10.9	11.7	10.2			17.1	21.8	21.4		
Fonthill	No.	1,412	2,324	2,790	165	247	311	88.5	25.9	218	484	573	162.8	18.4
	%	100.0	100.0	100.0	11.7	10.6	11.1			15.4	20.8	20.5		
Humberstone	No.	3,895	-	-	483	-	-	-	-	625	-	-	-	-
	%	100.0	-	-	12.4	-	-			16.0	-	-		
TOWNSHIPS														
Bertie	No.	5,515	8,595	9,281	645	980	955	48.1	-2.6	982	1,902	1,977	101.3	3.9
	%	100.0	100.0	100.0	11.7	11.4	10.3			17.8	22.1	21.3		
Crowland	No.	12,086	1,870	2,081	1,727	232	243	-85.9	4.7	2,440	463	488	-80.0	5.4
	%	100.0	100.0	100.0	14.3	12.4	11.7			20.2	24.7	23.4		
Humberstone	No.	3,923	6,574	4,783	527	848	556	5.5	-34.4	732	1,690	1,142	56.0	-32.4
	%	100.0	100.0	100.0	13.4	12.9	11.6			18.7	25.7	23.9		
Pelham	No.	3,939	4,795	5,270	468	549	562	20.1	2.4	791	1,146	1,218	54.0	6.3
	%	100.0	100.0	100.0	11.9	11.5	10.7			20.1	23.9	23.1		
Stamford	No.	17,729	31,014	-	2,323	3,907	-	-	-	3,152	7,177	-	-	-
	%	100.0	100.0	100.0	13.1	12.6	-			17.8	23.1	-		
Thorold	No.	6,522	6,815	8,111	857	926	997	16.3	7.7	1,239	1,668	2,028	63.7	21.6
	%	100.0	100.0	100.0	13.1	13.6	12.3			19.0	24.5	25.0		
Wainfleet	No.	3,594	4,755	5,121	438	601	607	38.6	1.0	719	1,104	1,256	74.7	13.8
	%	100.0	100.0	100.0	12.2	12.6	11.8			20.0	23.2	24.5		
Willoughby	No.	1,152	1,881	2,174	145	247	244	68.3	-1.2	231	464	544	135.5	17.2
	%	100.0	100.0	100.0	12.6	13.1	11.2			20.0	24.7	25.0		
TOTAL, WELLAND COUNTY														
	No.	123,233	164,741	178,818	14,394	19,090	18,580	29.1	-2.7	20,546	35,639	38,547	87.6	8.2
	%	100.0	100.0	100.0	11.7	11.6	10.4			16.7	21.0	21.5		

- Nil
x Less than 0.05 per cent

Source: Canada, Dominion Bureau of Statistics, Census of Canada, Population, 1951, 1961 and 1966 (Ottawa: Queen's Printer), Table 23, (1951), Bulletin SP-1 (92-525), (1961), and Bulletin S-2, (92-632).

TABLE 1 c

POPULATION DISTRIBUTION BY AGE GROUPS, INCORPORATED MUNICIPALITIES, WELLAND COUNTY, 1951, 1961 AND 1966 (Cont'd.)

		15-19				20-24				25-44				
		NUMBER		% CHANGE		NUMBER		% CHANGE		NUMBER		% CHANGE		
		1951 (14)	1961 (15)	1966 (16)	1966/1951 (17)	1951 (19)	1961 (20)	1966 (21)	1966/1951 (22)	1951 (24)	1961 (25)	1966 (26)	1966/1951 (27)	
CITIES														
Niagara Falls	No.	1,562	1,634	5,080	225.2	210.9	1,956	1,500	3,816	95.1	154.4	14,772	112.3	159.2
	%	6.8	7.3	8.9			8.5	6.7	6.7			26.0		
Port Colborne	No.	637	1,014	1,632	156.2	61.0	775	871	1,122	44.8	28.8	4,759	91.3	11.9
	%	7.7	6.8	9.1			9.4	5.8	6.2			26.5		
Welland	No.	1,113	2,811	3,742	236.2	33.1	1,292	2,242	2,978	130.5	32.8	10,094	106.7	x
	%	7.2	7.8	9.4			8.4	6.2	7.4			25.3		
TOWNS														
Fort Erie	No.	425	684	901	112.0	31.7	492	471	656	33.3	39.3	2,346	0.1	-4.0
	%	5.6	7.6	9.2			6.5	5.2	6.7			23.9		
Thorold	No.	392	569	831	112.0	46.0	545	440	611	12.1	38.9	2,275	16.5	-7.6
	%	6.1	6.6	9.4			8.5	5.1	6.9			25.7		
VILLAGES														
Chippawa	No.	118	187	335	183.9	79.1	111	180	210	89.2	16.7	1,117	103.8	7.6
	%	6.7	5.7	8.7			6.3	5.5	5.4			28.8		
Crystal Beach	No.	67	143	199	197.0	39.2	67	117	104	55.2	-11.1	390	12.4	-11.0
	%	5.6	7.6	10.7			5.6	6.2	5.6			21.0		
Fonthill	No.	83	186	254	206.0	36.6	83	120	205	147.0	70.8	713	74.8	8.0
	%	5.9	8.0	9.1			5.9	5.2	7.4			25.6		
Humberstone	No.	313	-	-	-	-	349	-	-	-	-	-	-	-
	%	8.0	-	-			9.0	-	-			-		
TOWNSHIPS														
Bertie	No.	359	658	861	139.8	30.9	337	441	598	77.4	35.6	2,226	44.1	3.7
	%	6.5	7.7	9.3			6.1	5.1	6.4			24.0		
Crowland	No.	836	170	228	-72.7	34.1	963	121	134	-86.1	10.7	518	-86.5	7.5
	%	6.9	9.1	11.0			8.0	6.5	6.4			24.9		
Humberstone	No.	272	479	463	70.2	-3.3	316	331	259	-18.0	-21.8	1,490	14.5	-35.0
	%	6.9	7.3	9.7			8.1	5.0	5.4			26.1		
Pelham	No.	263	405	541	105.7	33.6	232	265	360	55.2	35.8	1,226	12.8	5.8
	%	6.7	8.4	10.3			5.9	5.5	6.8			23.3		
Stamford	No.	1,210	2,128	-	-	-	1,396	1,572	-	-	-	-	-	-
	%	6.8	6.9	-			7.9	5.1	-			30.3		
Thorold	No.	426	516	748	75.6	45.0	468	344	477	1.9	38.7	2,162	10.0	13.8
	%	6.5	7.6	9.2			7.2	5.0	5.9			26.7		
Wainfleet	No.	274	414	467	70.4	12.8	266	276	311	16.9	12.7	1,181	27.4	5.4
	%	7.6	8.7	9.1			7.4	5.8	6.1			23.1		
Willoughby	No.	97	138	204	110.3	47.8	56	95	110	96.4	15.8	546	76.7	7.7
	%	8.4	7.3	9.4			4.9	5.0	5.1			25.1		
TOTAL, WELLAND COUNTY														
	No.	8,447	12,136	16,486	95.2	35.8	9,704	9,386	11,951	23.2	27.3	45,573	21.2	-0.7
	%	6.8	7.4	9.2			7.9	5.7	6.7			25.5		

POPULATION DISTRIBUTION BY AGE GROUPS, INCORPORATED MUNICIPALITIES, WELLAND COUNTY, 1951, 1961 and 1966 (Cont'd.)

		45-64				65 AND OVER					
		NUMBER		% CHANGE		NUMBER		% CHANGE			
		1951 (29)	1961 (30)	1966 (31)	1966/1951 (32)	1966/1961 (33)	1951 (34)	1961 (35)	1966 (36)	1966/1951 (37)	1966/1961 (38)
CITIES											
Niagara Falls	No.	5,266	5,000	10,796	105.0	115.9	1,871	2,618	4,943	164.2	88.8
	%	23.0	22.4	19.0			8.2	11.7	8.7		
Port Colborne	No.	1,674	2,876	3,356	100.5	16.7	491	1,035	1,344	173.7	29.9
	%	20.2	19.3	18.6			5.9	7.0	7.5		
Welland	No.	3,045	6,445	7,364	141.8	14.3	988	2,482	3,197	223.6	28.8
	%	19.8	17.9	18.4			6.4	6.9	8.0		
TOWNS											
Fort Erie	No.	1,622	1,835	2,043	26.0	11.3	614	869	937	52.6	7.8
	%	21.4	20.3	20.9			8.1	9.6	9.6		
Thorold	No.	1,400	1,549	1,636	16.9	5.6	502	783	765	52.4	-2.3
	%	21.9	17.9	18.5			7.9	9.1	8.7		
VILLAGES											
Chippawa	No.	352	497	601	70.7	20.9	149	190	251	68.5	32.1
	%	20.0	15.3	15.5			8.4	5.8	6.5		
Crystal Beach	No.	268	364	365	36.2	0.3	118	192	213	80.5	10.9
	%	22.2	19.3	19.6			9.8	10.2	11.5		
Fonthill	No.	304	439	513	68.8	16.9	151	188	221	46.4	17.6
	%	21.5	18.9	18.4			10.7	8.1	7.9		
Humberstone	No.	700	-	-	-	-	205	-	-	-	-
	%	18.0					5.3				
TOWNSHIPS											
Bertie	No.	1,074	1,547	1,824	69.8	17.9	573	756	840	46.6	11.1
	%	19.5	18.0	19.7			10.4	8.8	9.1		
Crowland	No.	1,809	295	348	-80.8	18.0	484	107	122	-74.8	14.0
	%	15.0	15.8	16.7			4.0	5.7	5.9		
Humberstone	No.	694	966	838	20.7	-13.3	292	341	277	-5.1	-18.8
	%	17.7	14.7	17.5			7.4	5.2	5.8		
Pelham	No.	739	912	981	32.7	7.6	359	359	382	6.4	6.4
	%	18.7	19.0	18.6			9.1	7.5	7.2		
Stamford	No.	2,965	5,160	-	-	-	976	1,680	-	-	-
	%	16.7	16.6				5.5	5.4			
Thorold	No.	1,161	996	1,236	6.5	24.1	406	465	463	14.0	-0.4
	%	17.8	14.6	15.2			6.2	6.8	5.7		
Wainfleet	No.	652	879	937	43.7	6.6	318	360	362	13.8	0.6
	%	18.1	18.5	18.3			8.9	7.6	7.1		
Willoughby	No.	207	329	384	85.5	16.7	107	101	142	32.7	40.6
	%	18.0	17.5	17.7			9.3	5.4	6.5		
TOTAL, WELLAND COUNTY											
	No.	23,932	30,089	33,222	38.8	10.4	8,604	12,526	14,459	68.0	15.4
	%	19.7	18.3	18.6			7.0	7.6	8.1		

TABLE 1.1

POPULATION DISTRIBUTION BY AGE GROUPS, INCORPORATED MUNICIPALITIES, WENTWORTH COUNTY, 1951, 1961 AND 1966

		TOTAL			NUMBER			CHANGE			5-14			
		1951 (1)	1961 (2)	1966 (3)	1951 (4)	1961 (5)	1966 (6)	1966/1951 (7)	1966/1961 (8)	1951 (9)	1961 (10)	1966 (11)		
													% CHANGE	
CITIES														
	No.	208,321	273,991	298,121	21,141	30,692	29,594	40.0	-3.6	28,655	51,021	57,153	99.5	12.0
Hamilton	%	100.0	100.0	100.0	10.1	11.2	9.9			13.8	18.6	19.2		
TOWNS														
	No.	14,210	57,644	65,941	1,780	7,354	8,135	35.7	10.6	2,228	12,437	15,415	591.8	19.2
Burlington (1)		100.0	100.0	100.0	12.5	12.8	12.3			15.7	22.4	23.4		
Dundas	No.	6,846	12,912	15,501	762	1,569	1,728	126.8	10.1	1,069	2,612	3,229	202.1	23.6
		100.0	100.0	100.0	11.1	12.2	11.1			15.6	20.2	20.8		
Stoney Creek	No.	1,922	6,043	7,243	252	715	759	201.2	6.2	304	1,261	1,378	353.3	9.3
		100.0	100.0	100.0	13.1	11.8	10.5			15.8	20.9	19.0		
VILLAGES														
	No.	2,827	-	-	341	-	-	-	-	492	-	-	-	-
Burlington Beach		100.0			12.1					17.4				
Waterdown	No.	1,347	1,844	1,935	138	173	199	25.9	15.0	240	413	428	78.3	3.6
		100.0	100.0	100.0	11.7	9.4	10.3			17.8	22.4	22.1		
TOWNSHIPS														
	No.	7,648	13,338	14,960	842	1,816	1,687	100.4	-7.1	1,147	3,235	3,711	223.5	14.7
Ancaster	%	100.0	100.0	100.0	11.0	13.6	11.3			15.0	24.3	24.8		
Barton	No.	8,482	-	-	1,234	-	-	-	-	1,262	-	-	-	-
		100.0			14.4					14.9				
Beverly	No.	4,138	5,023	5,520	482	611	635	31.7	3.9	815	1,161	1,308	60.5	12.7
		100.0	100.0	100.0	11.6	12.2	11.5			19.7	23.1	23.7		
Binbrook	No.	1,384	2,557	3,131	355	362	403	144.2	11.3	236	380	776	228.8	33.8
		100.0	100.0	100.0	11.9	14.2	12.9			17.1	22.7	24.8		
Flamborough, East	No.	7,045	4,334	5,089	896	592	561	-37.4	-5.2	1,209	1,087	1,278	5.7	17.6
		100.0	100.0	100.0	12.7	13.7	11.0			17.2	25.1	25.1		
Flamborough, West	No.	4,229	7,001	7,928	604	1,005	971	60.8	-3.4	750	1,577	1,885	151.3	19.5
		100.0	100.0	100.0	14.3	14.4	12.2			17.7	22.5	23.8		
Glanford	No.	2,444	4,714	5,763	354	712	781	120.6	9.7	436	1,117	1,485	240.6	30.6
		100.0	100.0	100.0	14.5	15.1	13.6			17.8	24.1	25.8		
Saltfleet	No.	9,450	16,424	17,984	1,365	2,419	2,129	56.0	-12.0	1,777	4,009	4,688	163.8	16.9
	%	100.0	100.0	100.0	14.4	14.7	11.8			18.8	24.4	26.1		
TOTAL, WENTWORTH COUNTY														
	No.	266,083	358,837	394,299	28,596	41,790	40,390	41.2	-3.4	38,392	70,454	79,678	107.5	13.1
	%	100.0	100.0	100.0	10.7	11.7	10.2			14.4	19.6	20.2		
TOTAL, WENTWORTH COUNTY INCLUDING BURLINGTON														
	No.	280,293	405,845	449,116	30,376	48,020	47,582	56.6	-0.9	40,620	81,030	92,734	128.3	14.4
	%	100.0	100.0	100.0	10.8	11.8	10.6			14.5	20.0	20.6		

- Nil

x Less than 0.05 per cent.

(1) Burlington as defined here includes all of Burlington, plus Nelson Township, Nelson Township was incorporated into Burlington on January 1st, 1958.

Source: Canada, Dominion Bureau of Statistics, Census of Canada, Population, 1951, 1961 and 1966 (Ottawa: Queen's Printer), Table 23, (1951), Bulletin SP-1 (92-525), (1961), and Bulletin S-2, (92-632).

TABLE 1 f

POPULATION DISTRIBUTION BY AGE GROUPS, INCORPORATED MUNICIPALITIES, WENTWORTH COUNTY, 1951, 1961 AND 1966 (Cont'd.)

		15-19			20-24			25-24							
		NUMBER		% CHANGE	NUMBER		% CHANGE	NUMBER		% CHANGE					
		1951 (14)	1961 (15)	1966 (16)	1966/1951 (17)	1966/1961 (18)	1951 (19)	1961 (20)	1966 (21)	1966/1951 (22)	1966/1961 (23)	1951 (24)	1961 (25)	1966 (26)	1966/1951 (27)
CITIES	No.	13,298 6.4	17,949 6.6	24,422 8.2	83.7	36.1	17,659 8.5	17,384 6.3	22,992 7.7	30.2	32.3	66,328 31.8	80,172 26.9	20.9	x
TOWNS	No.	856 6.0	3,894 6.8	5,316 8.1	521.0	36.3	936 6.6	2,604 4.5	4,297 6.5	359.1	65.0	4,538 31.9	19,457 29.4	326.8	8.2
Burlington (1)	No.	414 6.0	916 7.1	1,281 8.3	209.4	39.8	487 7.1	644 5.0	1,076 6.9	120.9	67.1	2,059 30.1	3,577 25.7	93.2	10.3
Dundas	No.	97 5.0	423 7.0	615 8.5	534.0	45.4	103 5.4	332 5.5	615 8.5	497.1	85.2	645 33.6	2,014 27.8	212.2	7.5
Stoney Creek	No.	193 6.8	-	-	-	-	216 7.6	-	-	-	-	898 31.8	-	-	-
VILLAGES	No.	72 5.4	182 4.9	177 9.1	145.8	-2.7	73 5.4	75 4.1	143 7.4	95.9	90.7	365 27.1	431 22.3	18.1	-1.6
Burlington Beach	No.	491 6.4	905 6.8	1,357 9.1	176.4	49.9	568 7.4	484 3.6	765 5.1	34.7	56.1	2,482 37.5	4,001 30.0	63.4	1.4
Ancaster	No.	345 4.1	-	-	-	-	504 5.9	-	-	-	-	1,173 36.2	-	-	-
Barton	No.	329 7.9	406 8.1	524 9.5	59.3	29.1	264 6.4	269 5.4	341 6.2	29.2	26.8	1,047 25.3	1,233 24.5	20.8	2.6
Beverly	No.	101 7.3	172 6.7	263 8.4	160.4	52.9	104 7.5	127 5.0	160 5.1	53.8	26.0	353 25.5	742 29.0	142.2	15.2
Binbrook	No.	410 5.8	294 6.8	471 9.3	14.9	60.2	434 6.2	164 3.8	284 5.6	-34.6	74.2	2,363 33.1	1,259 29.0	-41.5	5.1
Flamborough, East	No.	251 5.9	516 7.4	736 9.3	193.2	42.6	275 6.5	333 4.8	422 5.3	53.5	26.7	1,549 29.5	2,012 28.7	71.5	6.5
Flamborough, West	No.	153 6.0	282 6.0	480 8.3	213.7	70.2	150 6.1	252 5.4	296 5.1	97.3	17.5	785 32.1	1,666 31.1	112.2	13.6
Glanford	No.	592 6.3	1,109 6.8	1,596 8.9	169.6	43.9	581 6.2	789 4.8	949 5.3	63.3	26.3	3,031 32.1	4,985 27.7	64.5	0.5
Saltillect	No.	16,746 6.3	23,931 6.7	33,002 8.4	97.1	37.9	21,418 8.1	21,271 5.9	28,705 7.3	34.0	34.9	84,378 31.8	104,811 29.2	24.9	0.8
TOTAL, WENTWORTH COUNTY	No.	17,602 6.5	25,042 6.7	37,238 8.3	111.6	37.6	22,354 8.0	23,457 5.8	32,340 7.2	44.7	37.9	89,116 31.8	119,616 29.4	37.2	2.2
TOTAL, WENTWORTH COUNTY INCLUDING BURLINGTON	No.														

TABLE 1 f

POPULATION DISTRIBUTION BY AGE GROUP, INCORPORATED MUNICIPALITIES, WENTWORTH COUNTY, 1951, 1961 AND 1966. (Cont'd.)

		1951-64				65 AND OVER			
		NUMBER		CHANGE		NUMBER		CHANGE	
		1951	1961	1966	1966/1951	1951	1961	1966	1966/1951
		(29)	(30)	(31)	(32)	(34)	(35)	(36)	(37)
					(33)				(38)
CITIES									
Hamilton	No.	43,515	53,020	57,365	31.8	8.2	23,783	26,423	49.1
	%	20.9	19.4	19.2		8.5	8.7	8.9	11.1
TOWNS									
Burlington (1)	No.	2,709	9,761	10,185	276.0	43.4	3,223	3,226	177.4
	%	19.1	16.9	15.4		8.2	5.6	4.9	0.1
Dundas	No.	1,298	2,418	2,898	123.3	19.9	1,148	1,312	73.3
	%	19.0	18.7	18.7		11.1	8.9	8.5	14.3
Stoney Creek	No.	361	1,092	1,403	288.6	28.5	347	459	186.9
	%	18.8	18.1	19.4		8.3	5.7	6.3	32.3
VILLAGES									
Burlington Beach	No.	505	-	-	-	182	-	-	-
	%	17.9				6.4			
Waterdown	No.	286	414	378	32.2	-8.7	149	179	20.1
	%	21.2	22.4	19.5		11.4	8.1	9.3	
TOWNSHIPS									
Ancaster	No.	1,416	2,191	2,581	82.3	17.8	702	803	14.4
	%	18.5	16.4	17.2		9.2	5.3	5.4	13.7
Barton	No.	1,359	-	-	-	705	-	-	-
	%	16.0				8.3			
Beverly	No.	789	904	994	26.0	10.0	439	453	10.0
	%	19.1	18.0	18.0		10.0	8.7	8.2	3.2
Binbrook	No.	275	392	477	73.5	21.7	182	197	31.3
	%	19.9	15.3	15.2		10.8	7.1	6.3	8.2
Flamborough, East	No.	1,355	656	859	-36.6	30.9	478	313	-34.5
	%	19.2	15.1	16.9		6.8	282	6.1	11.0
Flamborough, West	No.	768	1,107	1,307	70.2	18.1	332	465	3.1
	%	18.2	15.8	16.5		7.9	451	465	
Glanford	No.	381	632	815	113.9	29.0	232	240	40.1
	%	15.6	13.4	14.1		7.6	6.4	5.9	3.4
Saltfleet	No.	1,544	2,452	2,891	87.2	17.9	499	42	29.7
	%	16.3	14.9	16.1		5.9	688	746	33.2
							4.2	4.1	8.4
TOTAL, WENTWORTH COUNTY									
	No.	53,852	67,507	74,486	38.3	10.3	22,501	32,367	43.8
	%	20.2	18.8	18.9		8.5	8.1	8.2	11.3
TOTAL, WENTWORTH COUNTY INCLUDING BURLINGTON									
	No.	56,561	75,039	82,153	45.2	9.5	23,664	34,816	47.1
	%	20.2	18.5	18.3		8.4	7.8	7.8	10.1

TABLE 1.2

POPULATION DISTRIBUTION BY AGE GROUPS, INCORPORATED MUNICIPALITIES, NORFOLK COUNTY, 1951, 1961 AND 1966

		0-4				5-14			
		TOTAL		NUMBER		% CHANGE		NUMBER	
		1951 (1)	1961 (2)	1951 (4)	1966 (3)	1951 (7)	1966/1951 (8)	1951 (9)	1966/1951 (12)
TOWNS									
Delhi	No.	2,517	3,427	284	316	281	-11.1	378	596
	%	100.0	100.0	11.3	9.2	8.0	-5.0	15.0	17.4
Port Dover	No.	2,440	3,064	259	322	306	18.1	442	565
	%	100.0	100.0	10.6	10.5	9.5	8.3	18.1	18.5
Simcoe	No.	7,269	8,754	742	848	918	23.7	1,081	1,684
	%	100.0	100.0	10.2	9.7	9.3	-10.6	14.9	19.2
Waterford	No.	1,745	2,221	165	227	203	23.0	256	434
	%	100.0	100.0	9.5	10.2	8.5	-	14.7	20.4
VILLAGES									
Long Point Park ¹	No.	45	-	3	-	-	-	5	-
	%	100.0	-	6.7	-	-	-12.7	11.1	-
Port Rowan	No.	793	771	76	71	62	-18.4	151	155
	%	100.0	100.0	9.6	9.0	8.0	-	19.0	17.5
TOWNSHIPS									
Charlotteville	No.	4,023	5,380	574	657	646	-1.7	985	1,144
	%	100.0	100.0	12.4	12.2	12.1	-12.6	21.3	21.3
Houghton	No.	2,081	2,276	218	261	228	4.6	458	511
	%	100.0	100.0	10.5	11.5	10.8	-13.5	22.0	22.4
Middleton	No.	3,178	3,917	356	465	402	12.9	602	769
	%	100.0	100.0	11.2	11.9	10.5	-7.1	19.0	19.6
Townsend	No.	4,936	5,421	582	633	588	1.0	882	1,284
	%	100.0	100.0	11.8	11.6	10.7	-10.8	17.9	23.7
Walsingham, North	No.	2,549	2,920	260	381	340	30.8	499	581
	%	100.0	100.0	10.2	13.0	12.0	-22.9	19.6	19.9
Walsingham, South	No.	2,070	2,431	289	306	236	14.3	430	576
	%	100.0	100.0	14.0	12.6	10.6	-11.0	20.8	23.7
Windham	No.	4,824	5,885	552	709	631	-39.2	894	1,325
	%	100.0	100.0	11.5	12.0	10.7	-41.6	18.5	22.5
Woodhouse	No.	3,638	3,992	451	469	274	-	692	937
	%	100.0	100.0	12.4	11.7	9.1	-	19.0	23.5
TOTAL, NORFOLK COUNTY									
	No.	42,708	50,475	4,811	5,665	5,115	6.3	7,755	10,567
	%	100.0	100.0	11.3	11.2	10.1	-9.7	18.2	20.9

- Nil

1Park Commission

Source: Canada, Dominion Bureau of Statistics, Census of Canada, Population, 1951, 1961 and 1966 (Ottawa: Queen's Printer), Table 23, (1951), Bulletin SP-1 (92-525), (1961), and Bulletin S-2, (92-632).

TABLE 1.2

POPULATION DISTRIBUTION BY AGE GROUPS, INCORPORATED MUNICIPALITIES, NORFOLK COUNTY, 1951, 1961 AND 1966 (Cont'd.)

		15-19				20-24				25-44						
		NUMBER		% CHANGE		NUMBER		% CHANGE		NUMBER		% CHANGE				
		1951 (14)	1961 (15)	1966 (16)	1966/1951 (17)	1966/1961 (18)	1951 (19)	1961 (20)	1966 (21)	1966/1951 (22)	1966/1961 (23)	1951 (24)	1961 (25)	1966 (26)	1966/1951 (27)	1966/1961 (28)
TOWNS																
Delhi	No.	148	231	288	94.6	24.7	199	200	223	12.1	11.5	704	855	760	8.0	-11.1
	%	5.9	6.7	8.2			7.9	5.8	6.4			280	25.0	21.7		
Port Dover	No.	179	252	310	73.2	23.0	144	202	212	47.2	5.0	668	680	682	2.1	0.3
	%	7.3	8.2	9.6			5.9	6.6	6.6			27.4	22.2	21.2		
Stamice	No.	546	665	954	74.7	43.5	600	597	658	9.7	10.2	2,017	2,072	2,267	12.4	9.4
	%	7.5	7.6	9.6			8.3	6.8	6.6			27.7	23.7	22.8		
Waterford	No.	117	150	198	69.2	32.0	107	115	132	23.4	14.8	508	534	537	5.7	0.6
	%	6.7	6.8	8.3			6.1	5.2	5.5			29.1	24.0	22.6		
VILLAGES																
Long Point Park ¹	No.	1	-	-	-	-	2	-	-	-	-	6	-	-	-	-
	%	2.2	-	-			4.5	-	-			13.3	-	-		
Port Rowan	No.	53	55	69	30.2	25.5	47	48	39	-17.0	-18.8	173	156	147	-15.0	-5.8
	%	6.7	7.0	8.9			5.9	6.1	5.1			21.8	19.8	19.1		
TOWNSHIPS																
Charlottetville	No.	358	484	465	29.9	-3.9	311	379	325	4.5	-14.2	1,187	1,312	1,253	5.6	-4.5
	%	7.8	9.0	8.7			6.7	7.0	6.1			25.7	24.4	23.5		
Houghton	No.	159	223	195	22.6	-12.6	140	142	159	13.6	12.0	526	571	493	-6.3	-13.7
	%	7.6	9.8	9.3			6.7	6.2	7.6			25.3	25.1	23.5		
Middleton	No.	254	286	329	29.5	15.0	246	298	249	1.2	-16.4	872	1,026	976	11.9	-4.9
	%	8.0	7.3	8.6			7.7	7.6	6.5			27.4	26.2	25.4		
Townsend	No.	461	439	513	11.3	16.9	323	297	312	-3.4	5.1	1,299	1,290	1,276	-1.8	-1.1
	%	9.3	8.1	9.3			6.5	5.5	5.7			26.3	23.8	23.1		
Walsingham, North	No.	241	271	229	-5.0	-15.5	193	249	206	6.7	-17.3	706	718	701	-0.7	-2.4
	%	9.4	9.3	8.1			7.6	8.5	7.3			27.7	24.6	24.7		
Walsingham, South	No.	158	234	240	51.9	2.6	168	149	140	-16.7	-6.0	497	591	489	-1.6	-17.3
	%	7.6	9.6	10.8			8.1	6.1	6.3			24.0	24.3	22.0		
Windham	No.	363	444	588	62.0	32.4	368	375	340	-7.6	-9.3	1,342	1,570	1,481	10.4	-5.7
	%	7.5	7.5	10.0			7.6	6.4	5.8			27.8	26.7	25.1		
Woodhouse	No.	265	318	301	13.6	-5.3	229	195	149	-34.9	-23.6	1,018	991	675	-33.7	-31.9
	%	7.3	8.0	9.9			6.3	4.9	4.9			28.0	24.8	22.3		
TOTAL, NORFOLK COUNTY																
	No.	3,303	4,052	4,679	41.7	15.5	3,077	3,246	3,144	2.2	-3.1	11,523	12,366	11,737	1.9	-5.1
	%	7.7	8.0	9.3			7.2	6.4	6.2			27.0	24.5	23.2		

TABLE 1.8

POPULATION DISTRIBUTION BY AGE GROUPS, INCORPORATED MUNICIPALITIES, NORFOLK COUNTY, 1951, 1961 AND 1966 (Cont'd.)

		45-64				65 AND OVER					
		NUMBER		% CHANGE		NUMBER		% CHANGE			
		1951 (29)	1961 (30)	1966 (31)	1966/1951 (32)	1966/1951 (33)	1951 (34)	1961 (35)	1966 (36)	1966/1951 (37)	1966/1961 (38)
TOWNS											
	No.	605	890	874	44.5	-1.8	199	339	503	152.8	48.4
	%	24.0	26.0	24.9			7.9	9.9	14.4		
	No.	468	656	710	51.7	8.2	280	387	413	47.5	6.7
	%	19.2	21.4	22.1			11.5	12.6	12.8		
	No.	1,518	1,914	2,082	37.2	8.8	765	974	1,160	51.6	19.1
	%	20.9	21.9	21.0			10.5	11.1	11.7		
	No.	330	448	482	46.1	7.6	262	293	330	26.0	12.6
	%	18.9	20.2	20.3			15.0	13.2	13.9		
VILLAGES											
	No.	26	-	-	-	-	2	-	-	-	-
	%	57.8	-	-			4.4	-	-		
	No.	157	168	181	15.3	7.7	136	148	138	1.5	-6.8
	%	19.8	21.4	23.5			17.2	18.8	17.9		
TOWNSHIPS											
	No.	857	1,002	996	16.2	-0.6	351	402	423	20.5	5.2
	%	18.5	18.6	18.7			7.6	7.5	7.9		
	No.	431	412	360	-16.5	-12.6	149	156	166	11.4	6.4
	%	20.7	18.1	17.1			7.2	6.9	7.9		
	No.	672	821	783	16.5	-4.6	176	252	336	90.9	33.3
	%	21.2	21.0	20.4			5.5	6.4	8.8		
	No.	985	1,083	1,052	6.8	-2.9	404	395	400	-1.0	1.3
	%	20.0	20.0	19.0			8.2	7.3	7.2		
	No.	528	566	494	-6.4	-12.7	122	154	187	53.3	21.4
	%	20.7	19.4	17.4			4.8	5.3	6.6		
	No.	366	396	412	12.6	4.0	162	179	194	19.8	8.4
	%	17.7	16.3	18.6			7.8	7.4	8.7		
	No.	1,008	1,105	1,071	6.3	-3.1	297	357	446	50.2	2.9
	%	20.9	18.8	18.1			6.2	6.1	7.6		
	No.	681	753	618	-9.3	-17.9	302	329	366	21.2	1.2
	%	18.7	18.9	20.4			8.3	8.2	12.1		
TOTAL, NORFOLK COUNTY											
	No.	8,632	10,214	10,115	17.2	-1.0	3,607	4,365	5,062	40.3	0
	%	20.2	20.3	20.0			8.4	8.7	10.0		

TABLE 2. a

POPULATION DISTRIBUTION BY SEX, COUNTIES, NIAGARA REGION AND PROVINCE OF ONTARIO, 1951, 1961 AND 1966

	1951 POPULATION			1961 POPULATION			1966 POPULATION			CHANGE IN TOTAL POPULATION		
	1951 POPULATION			1961 POPULATION			1966 POPULATION			1966/1951		
	Total No. (1)	Male No. (2)	Female No. (3)	Total No. (4)	Male No. (5)	Female No. (6)	Total No. (7)	Male No. (8)	Female No. (9)	Absolute No. (10)	% (11)	% (12)
BRANT	72,857	36,405	36,452	83,839	41,684	42,155	90,945	45,142	45,803	18,088	24.8	7,106
HALDIMAND	24,138	12,282	11,856	28,197	14,270	13,927	30,020	15,111	14,909	5,882	24.4	1,823
LINCOLN	89,366	44,842	44,524	126,674	63,326	63,348	146,099	72,983	73,116	56,733	63.5	19,425
WELLAND	123,233	62,843	60,390	164,741	82,722	82,019	178,818	89,709	89,109	55,585	45.1	14,077
WENTWORTH ⁽¹⁾	264,083	132,404	131,679	358,837	178,537	180,300	394,299	196,006	198,293	128,216	48.2	35,462
TOTAL, NIAGARA REGION	511,677	258,776	252,901	762,288	380,539	381,749	840,181	418,951	421,230	264,504	45.9	77,893
NORFOLK	42,708	21,751	20,957	50,477	25,675	24,800	50,578	25,597	24,981	7,870	18.4	103
TOTAL, NIAGARA REGION INCLUDING NORFOLK	618,385	310,527	307,858	812,763	406,214	406,549	890,759	444,548	446,211	272,374	44.0	77,996
TOTAL, PROVINCE OF ONTARIO	4,597,542	2,314,170	2,283,372	6,236,092	3,134,528	3,101,564	6,960,870	3,479,149	3,481,721	2,363,328	51.4	724,778

(1) Wentworth County total does not include that part of Burlington that is in Halton County.

Source: Canada, Dominion Bureau of Statistics, Census of Canada, Population, 1951, 1961 and 1966 (Ottawa: Queen's Printer), Table 7, Table 7 and Table 9.

TABLE 2 b

POPULATION DISTRIBUTION BY SEX, INCORPORATED MUNICIPALITIES, BRANT COUNTY, 1951, 1961 AND 1966

	1951 POPULATION			1961 POPULATION			1966 POPULATION			CHANGE IN TOTAL POPULATION			
	Total No. (1)	Male No. (2)	Female No. (3)	Total No. (4)	Male No. (5)	Female No. (6)	Total No. (7)	Male No. (8)	Female No. (9)	1966/1951		1966/1961	
										Absolute No. (10)	%	Absolute No. (12)	%
CITIES													
Brantford	36,727	17,903	18,824	55,201	26,976	28,225	59,854	29,346	30,508	23,127	63.0	4,653	8.4
TOWNS													
Paris	5,249	2,473	2,776	5,820	2,761	3,059	6,271	2,999	3,272	1,022	19.5	451	7.7
TOWNSHIPS													
Brantford	17,589	9,081	8,508	7,764	4,125	3,639	9,062	4,714	4,348	-8,527	-58.5	1,298	16.7
Burford	4,776	2,507	2,269	5,492	2,867	2,625	5,628	2,883	2,725	852	17.8	136	2.5
Dumfries, South	3,121	1,633	1,488	3,241	1,684	1,557	3,546	1,778	1,768	425	13.6	305	9.4
Oakland	1,168	605	563	1,323	685	638	1,336	677	659	168	14.4	13	1.0
Onondaga	1,168	620	548	1,199	645	554	1,239	656	583	71	6.1	40	3.3
Indian Reserves	3,054	1,388	1,666	3,799	1,921	1,878	4,009	2,089	1,920	930	11.1	210	5.5
TOTAL, BRANT COUNTY	72,857	36,405	36,452	83,839	41,684	42,155	90,945	45,142	45,803	18,088	24.8	7,106	8.5

Source: Canada, Dominion Bureau of Statistics, Census of Canada, Population, 1951, 1961 and 1966 (Ottawa: Queen's Printer), Table 7, Table 7 and Table 9.

TABLE 2 c

POPULATION DISTRIBUTION BY SEX, INCORPORATED MUNICIPALITIES, HALDIMAND COUNTY, 1951, 1961 AND 1966

	1951 POPULATION			1961 POPULATION			1966 POPULATION			CHANGE IN TOTAL POPULATION		
	Total	Male	Female	Total	Male	Female	Total	Male	Female	1966/1951		
	No. (1)	No. (2)	No. (3)	No. (4)	No. (5)	No. (6)	No. (7)	No. (8)	No. (9)	Absolute No. (10)	(11)	Absolute No. (12) (13)
TOWNS												
Caledonia	1,681	821	860	2,198	1,079	1,119	2,725	1,368	1,357	1,044	62.1	527
Dunnville	4,478	2,092	2,386	5,181	2,482	2,699	5,402	2,543	2,859	924	20.6	221
VILLAGES												
Cavuga	719	350	369	897	434	463	1,031	505	526	312	43.4	134
Hagersville	1,746	823	923	2,075	1,031	1,044	2,169	1,090	1,079	423	24.2	94
Jarvis	652	320	332	783	388	395	824	413	411	172	26.4	41
TOWNSHIPS												
Canborough	971	500	471	1,114	559	555	1,263	547	616	292	30.1	149
Cavuga, North	1,369	719	650	1,525	812	713	1,540	797	743	171	12.5	15
Cavuga, South	626	324	302	587	314	273	637	336	301	11	1.8	50
Dunn	820	438	382	1,055	521	534	1,196	584	612	376	45.9	141
Moulton	1,871	979	892	2,160	1,107	1,053	2,403	1,250	1,153	532	28.4	243
Oneida	1,255	650	605	1,542	795	747	1,630	837	793	375	29.9	88
Rainham	1,563	798	765	1,790	932	858	1,835	948	887	272	17.4	45
Seneca	1,762	940	822	2,086	1,116	970	2,253	1,186	1,067	491	27.9	167
Sherbrooke	385	210	175	375	211	164	404	222	182	19	4.9	29
Walpole	3,650	1,950	1,700	4,083	2,092	1,991	3,947	1,990	1,957	297	8.1	-136
Indian Reserves	590	316	274	746	397	349	761	395	366	171	29.0	15
TOTAL, HALDIMAND COUNTY	24,138	12,282	11,856	28,197	14,270	13,927	30,020	15,111	14,909	5,882	24.4	1,823
												6.5

Source: Canada, Dominion Bureau of Statistics, Census of Canada, Population, 1951, 1961 and 1966 (Ottawa: Queen's Printer), Table 7, Table 7 and Table 9.

TABLE 2 d

POPULATION DISTRIBUTION BY SEX, INCORPORATED MUNICIPALITIES, LINCOLN COUNTY, 1951, 1961 AND 1966

	1951 POPULATION			1961 POPULATION			1966 POPULATION			CHANGE IN TOTAL POPULATION			
	Total No. (1)	Male (2)	Female (3)	Total No. (4)	Male No. (5)	Female No. (6)	Total No. (7)	Male No. (8)	Female No. (9)	1966/1951		1966/1961 Absolute No. (12) (13)	
										Absolute No. (10)	% (11)		
CITIES													
St. Catharines	37,984	18,798	19,186	84,472	41,922	-2,550	97,101	48,216	-8,865	59,117	155.6	12,629	15.0
TOWNS													
Merrittton	4,714	2,349	2,365	-	-	-	-	-	-	-4,714	-100.0	-	-
Reamsville ¹	1,712	828	884	2,537	1,247	1,290	3,886	1,911	1,975	2,174	127.0	1,349	53.2
Grimsby	2,773	1,292	1,481	5,148	2,512	2,636	6,634	3,273	3,361	3,861	139.2	1,486	28.9
Niagara	2,108	1,052	1,056	2,712	1,374	1,338	3,113	1,570	1,543	1,005	47.7	401	14.8
Port Dalhousie	2,616	1,303	1,313	-	-	-	-	-	-	-2,616	-100.0	-	-
TOWNSHIPS													
Caistor	1,357	709	648	1,670	876	794	1,822	924	898	465	34.3	152	9.1
Clinton	4,075	2,058	2,017	5,825	2,938	2,887	5,815	2,919	2,896	1,740	-2.7	-10	-0.2
Gainsborough	2,343	1,241	1,102	2,532	1,339	1,193	2,852	1,519	1,333	509	21.7	320	12.6
Graham	15,411	7,907	7,504	-	-	-	-	-	-	-15,411	-100.0	-	-
Grimsby, North	2,973	1,510	1,463	5,757	2,934	2,823	7,180	3,527	3,653	7,277	111.5	1,423	24.7
Grimsby, South	1,726	894	832	2,319	1,189	1,130	2,669	1,356	1,313	943	54.6	350	15.1
Louth	4,473	2,254	2,219	5,086	2,613	2,473	5,677	2,893	2,784	1,204	26.9	591	11.6
Niagara	5,101	2,647	2,454	8,616	4,382	4,234	9,900	4,955	4,945	4,654	83.3	734	8.5
TOTAL, LINCOLN COUNTY	89,366	44,842	44,524	126,674	63,326	63,348	146,099	72,983	73,116	56,733	63.5	19,425	15.3

Village in 1951 and 1961.

- Nil

Source: Canada, Dominion Bureau of Statistics, Census of Canada, Population, 1951, 1961 and 1966 (Ottawa: Queen's Printer), Table 7, Table 7 and Table 9.

TABLE 2. e

POPULATION DISTRIBUTION BY SEX, INCORPORATED MUNICIPALITIES, WELLAND COUNTY, 1951, 1961 AND 1966

	1951 POPULATION			1961 POPULATION			1966 POPULATION			CHANGE IN TOTAL POPULATION		
	Total		No.	Total		No.	Total		No.	1966/1951		1966/1961
	No.	Male		No.	Male		No.	Male		Absolute	%	Absolute
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
												(13)
CITIES												
Niagara Falls	22,874	11,407	11,467	22,351	10,774	11,577	56,891	28,179	28,712	34,017	148.7	34,560
Port Colborne	8,215	4,248	3,967	14,886	7,520	7,366	17,986	9,059	8,927	9,711	117.4	20,009
Welland	15,382	7,656	7,726	36,079	18,184	17,895	39,960	20,019	19,941	24,578	159.8	3,681
TOWNS												
Port Erie	7,572	3,758	3,814	9,027	4,464	4,563	9,793	4,876	4,917	2,221	29.3	766
Thorold	6,397	3,316	3,081	8,633	4,324	4,309	8,843	4,443	4,400	2,446	38.2	210
VILLAGES												
Chippawa	1,762	897	865	3,256	1,640	1,616	3,877	1,986	1,891	2,115	120.0	621
Crystal Beach	1,204	602	602	1,886	947	939	1,857	905	952	653	54.2	-29
Fonthill	1,412	683	729	2,324	1,130	1,194	2,790	1,356	1,434	1,378	97.6	466
Humberstone	3,895	1,975	1,920	-	-	-	-	-	-	-3,895	-100.0	-
TOWNSHIPS												
Bertie	5,515	2,747	2,768	8,595	4,263	4,332	9,281	4,651	4,630	3,766	68.3	686
Crowland	12,086	6,408	5,678	1,870	969	901	2,081	1,070	1,011	-10,005	-82.8	211
Humberstone	3,923	2,041	1,882	6,574	3,358	3,216	4,783	2,421	2,362	860	21.9	-1,791
Pelham	3,939	2,029	1,910	4,795	2,537	2,258	5,270	2,774	2,496	1,331	33.8	475
Stamford	17,729	9,216	8,513	31,014	15,680	15,334	-	-	-	-17,729	-100.0	-31,014
Thorold	6,522	3,362	3,160	6,815	3,497	3,318	8,111	4,158	3,953	1,589	24.4	1,296
Mainfleet	3,594	1,899	1,695	4,755	2,481	2,274	5,121	2,693	2,428	1,527	42.5	366
Willoughby	1,152	599	553	1,881	954	927	2,174	1,119	1,055	1,022	88.7	293
TOTAL, WELLAND COUNTY	123,233	62,843	60,390	164,741	82,722	82,019	178,818	89,709	89,109	55,585	45.1	14,077
												8.5

- Nil

Source: Canada, Dominion Bureau of Statistics, Census of Canada, Population, 1951, 1961 and 1966 (Ottawa: Queen's Printer), Table 7, Table 7 and Table 9.

TABLE 2-1

POPULATION DISTRIBUTION BY SEX, INCORPORATED MUNICIPALITIES, WENTWORTH COUNTY, 1951, 1961 AND 1966

	1951 POPULATION						1961 POPULATION						1966 POPULATION						CHANGE IN TOTAL POPULATION					
	Total			Female			Total			Female			Total			Female			1966/1951			1966/1961		
	No. (1)	Male (2)	% (3)	No. (4)	Male (5)	% (6)	No. (7)	Male (8)	% (9)	No. (10)	Male (11)	% (12)	Absolute (13)	% (14)	Absolute (15)	% (16)	Absolute (17)	% (18)	Absolute (19)	% (20)	Absolute (21)	% (22)		
CITIES																								
Hamilton	208,321	103,025	105,296	273,991	135,657	138,334	298,121	147,542	150,579	89,800	43.1	24,130	8.8											
TOWNS																								
Burlington (1)	14,210	7,226	6,984	47,008	23,647	23,361	65,941	33,118	32,823	51,731	364.0	18,913	40.3											
Dundas	6,846	3,277	3,569	12,912	6,283	6,629	15,501	7,589	7,912	8,655	126.4	2,589	20.1											
Stoney Creek	1,922	921	1,001	6,043	3,006	3,037	7,243	3,576	3,667	5,321	276.8	1,200	19.9											
VILLAGES																								
Burlington Beach	2,827	1,425	1,402	-	-	-	-	-	-	-2,827	-100.0	-	-											
Waterdown	1,347	671	676	1,844	938	906	1,935	991	944	588	43.7	91	4.9											
TOWNSHIPS																								
Ancaster	7,648	3,949	3,699	13,338	6,779	6,559	14,960	7,554	7,406	7,312	95.6	1,622	12.2											
Barton	8,482	4,204	4,218	-	-	-	-	-	-	-8,482	-100.0	-	-											
Beverly	4,138	2,143	1,995	5,023	2,589	2,434	5,520	2,843	2,677	1,382	33.4	497	9.9											
Brook	1,384	685	689	2,557	1,281	1,276	3,131	1,614	1,517	1,747	126.2	574	22.4											
Flamborough, East	7,045	3,595	3,450	4,334	2,258	2,076	5,089	2,610	2,479	-1,956	-27.8	755	17.4											
Flamborough, West	4,229	2,225	2,004	7,001	-	3,464	7,928	-	3,923	4,398	87.5	927	13.2											
Glanford	2,444	1,285	1,159	4,714	-	2,272	5,703	2,969	2,794	3,316	135.8	1,049	22.3											
Saltfleet	9,450	4,929	4,521	16,424	8,466	7,958	17,984	9,227	8,757	8,534	90.3	1,560	9.5											
TOTAL, WENTWORTH COUNTY	266,083	132,404	133,679	358,837	178,537	180,300	394,299	196,006	198,293	128,216	48.2	35,462	9.9											
TOTAL, WENTWORTH COUNTY INCLUDING BURLINGTON	280,293	139,630	140,663	395,189	196,883	198,306	449,116	223,638	225,478	168,823	60.2	53,927	13.6											

(1) Burlington as defined here includes all of Burlington, plus Nelson Township. Nelson Township was incorporated into Burlington on January 1st, 1958.

- Nil

Source: Canada, Dominion Bureau of Statistics, Census of Canada, Population, 1951, 1961 and 1966 (Ottawa: Queen's Printer), Table 7, Table 7 and Table 9.

TABLE 2.8

POPULATION DISTRIBUTION BY SEX, INCORPORATED MUNICIPALITIES, NORFOLK COUNTY, 1951, 1961 AND 1966

	1951 POPULATION				1961 POPULATION				1966 POPULATION				CHANGE IN TOTAL POPULATION			
	Total		Male		Total		Male		Total		Male		1966/1951		1966/1961	
	No. (1)	No. (2)	No. (3)	No. (4)	No. (5)	No. (6)	No. (7)	No. (8)	No. (9)	Absolute (10)	% (11)	Absolute (12)	% (13)	Absolute (14)	% (15)	
TOWNS																
Delhi ¹	2,517	1,213	1,304	3,427	1,725	1,702	3,503 ²	1,761	1,742	986	39.2	76	2.2			
Port Dover ¹	2,440	1,206	1,234	3,064	1,525	1,539	3,220 ³	1,589	1,631	780	32.0	156	5.1			
Simcoe	7,269	3,404	3,865	8,754	4,121	4,633	9,929 ³	4,806	4,123	2,660	36.6	1,177	13.4			
Waterford ¹	1,745	835	910	2,221	1,090	1,131	2,379	1,177	1,202	634	36.3	158	7.1			
VILLAGES																
Long Point (Park Commission)	45	30	15	-	-	-	-	-	-	-45	-100.0	-	-			
Port Rowan	793	380	413	787	370	417	771	365	406	-22	-2.8	-16	-2.0			
TOWNSHIPS																
Charlotteville	4,623	2,433	2,190	5,380	2,794	2,586	5,334	2,766	2,568	711	15.4	-46	-0.9			
Houghton	2,081	1,093	988	2,276	1,213	1,063	2,101	1,112	989	20	1.0	-175	-7.7			
Middleton	3,178	1,697	1,481	3,917	2,047	1,870	3,835 ⁴	1,940	1,895	657	20.7	-82	-2.1			
Townsend	4,936	2,574	2,362	5,421	2,850	2,571	5,524	2,865	2,659	588	11.9	103	1.9			
Walsingham, North	2,549	1,334	1,215	2,920	1,520	1,400	2,835	1,468	1,367	286	11.2	-85	-2.9			
Walsingham, South	2,070	1,071	999	2,431	1,271	1,160	2,220	1,143	1,077	150	7.2	-211	-8.7			
Windham	4,824	2,611	2,213	5,885	3,097	2,788	5,901 ²	3,036	2,865	1,077	22.3	16	0.3			
Woodhouse	3,638	1,870	1,768	3,992	2,052	1,940	3,026 ³	1,569	1,457	-612	-16.8	-966	-24.2			
TOTAL, NORFOLK COUNTY	42,708	21,751	20,957	50,475	25,575	24,800	50,578	25,597	24,981	7,870	18.4	103	0.2			

- Nil

¹Village in 1951.²Part of Windham annexed to Delhi Town, 1962.³Part of Woodhouse annexed to Simcoe Town, 1964, and to Port Dover Town, January 1, 1966.⁴Part of Middleton annexed to Tillsburg Town, Oxford County, April 1, 1966.Source: Canada, Dominion Bureau of Statistics, Census of Canada, Population, 1951, 1961 and 1966 (Ottawa: Queen's Printer), Table 7, Table 7 and Table 9.

URBAN AND RURAL POPULATION DISTRIBUTION BY COUNTIES, NIAGARA REGION AND PROVINCE OF ONTARIO, 1951, 1961 AND 1966

	POPULATION - 1956 DEFINITION				POPULATION - 1961 AND 1966 DEFINITIONS				PER CENT CHANGE	
	1951		1961		1961		1966		1961/1951	1966/1961
	No. (1)	% (2)	No. (3)	% (4)	No. (5)	% (6)	No. (7)	% (8)	Total (9)	Total (10)
BRANT										
Urban	57,480	78.9	63,635	75.9	63,635	75.9	69,529	76.5	10.7	9.3
Rural	15,377	21.1	20,204	24.1	20,204	24.1	21,416	23.5	31.4	6.0
HALDIMAND										
Urban	7,905	32.7	9,454	33.5	9,454	33.5	11,327	37.7	19.6	19.8
Rural	16,233	67.3	18,743	66.5	18,743	66.5	18,693	62.3	15.5	0.3
LINCOLN										
Urban	66,552	74.5	94,869	74.9	94,869	74.9	117,274	80.3	42.5	23.6
Rural	22,814	25.5	31,805	25.1	31,805	25.1	28,825	19.7	39.4	-9.4
WELLAND										
Urban	98,525	80.0	133,658	81.1	133,658	81.1	149,776	83.8	35.7	12.1
Rural	24,708	20.0	31,083	18.9	31,083	18.9	29,042	16.2	25.8	-6.6
WENTWORTH (1)										
Urban	258,117	97.0	358,837	100.0	324,341	90.4	356,839	90.5	39.0	10.0
Rural	7,966	3.0	-	-	34,496	9.6	37,460	9.5	-100.0	8.6
TOTAL, NIAGARA REGION										
Urban	488,579	84.9	660,453	86.6	625,957	82.1	704,745	83.9	35.2	12.6
Rural	87,098	15.1	101,835	13.4	136,331	17.9	135,436	16.1	16.9	-0.7
NORFOLK										
Urban	13,971	32.7	17,466	34.6	17,466	34.6	19,031	37.6	25.0	9.0
Rural	28,737	67.3	33,009	65.4	33,009	65.4	31,547	62.4	14.9	-4.4
TOTAL, NIAGARA REGION INCLUDING NORFOLK										
Urban	502,550	81.3	677,919	83.4	643,423	79.2	723,776	81.3	28.0	12.5
Rural	115,835	18.7	134,844	16.6	169,340	20.8	166,983	18.7	46.2	-1.4
TOTAL, PROVINCE OF ONTARIO										
Urban	3,375,825	73.4	4,941,228	79.2	4,823,529	77.3	5,593,440	80.4	42.9	16.0
Rural	1,221,717	26.6	1,294,864	20.8	1,412,563	22.7	1,367,430	19.6	15.6	-3.2

(1)Wentworth County total does not include that part of Burlington that is in Halton County.

- Nil

Definitions of Rural and Urban:

1956: - All cities, towns and villages of 1,000 and over, whether incorporated or unincorporated, as well as all parts of Census Metropolitan areas were classified as urban, the remainder as rural.

1961 & 1966: - All cities, towns and villages of 1,000 and over, whether incorporated or not, were classed as urban, as well as the urbanized fringes of (a) cities classed as metropolitan areas, (b) those classed as other major urban areas, and (c) certain smaller cities, if the city together with its urbanized fringe was 10,000 population or over. The remainder of the population living outside these urban centres and suburban fringes is classed as rural.

Source: Canada, Dominion Bureau of Statistics, Census of Canada, Population, 1961 and 1966, (Ottawa: Queen's Printer), Table 13.

TABLE 4. a

RURAL FARM AND RURAL NON FARM POPULATION DISTRIBUTION, COUNTIES, NIAGARA REGION AND PROVINCE OF ONTARIO, 1961 AND 1966

	1961 RURAL					1966 RURAL					PER CENT CHANGE 1966/1961			
	Farm ¹		Non-Farm			Farm ¹		Non-Farm			Total		Farm	
	Total No. (1)	No. (2)	Total (3)	No. (4)	% Of Total (5)	Total No. (6)	% Of Total (7)	No. (8)	% Of Total (9)	Non-Farm No. (10)	Total (11)		Farm (12)	Non-Farm (13)
BRANT	20,204	7,974	39.5	12,230	60.5	21,416	7,267	33.9	14,149	66.1	6.0		-8.9	15.7
HALDIMAND	18,743	8,900	47.5	9,843	52.5	18,693	8,254	44.2	10,439	55.8	-0.3		-7.3	6.1
LINCOLN	31,805	12,180	38.3	19,625	61.7	28,825	13,599	47.2	15,226	52.8	-9.4		11.7	-22.4
WELLAND	31,083	6,415	20.6	24,668	79.4	29,042	6,365	21.9	22,677	78.1	-6.6		-0.8	-8.1
WENTWORTH ²	34,496	8,762	25.4	25,734	74.6	37,460	8,718	23.3	28,742	76.7	8.6		-0.5	11.7
TOTAL, NIAGARA REGION	136,331	44,231	32.4	92,100	67.6	135,436	44,203	32.6	91,233	67.4	-0.7		-0.1	-0.9
NORFOLK	33,009	14,621	44.3	18,388	55.7	31,547	13,939	44.2	17,608	55.8	-4.4		-4.7	-4.2
TOTAL, NIAGARA REGION INCLUDING NORFOLK COUNTY	169,340	58,852	34.8	110,488	65.2	166,983	58,142	34.8	108,841	65.2	-1.4		-1.2	-1.5
TOTAL, PROVINCE OF ONTARIO	1,412,563	505,699	35.8	906,864	64.2	1,367,430	481,695	35.2	885,735	64.8	-3.2		-4.7	-2.3

¹ A "farm" for census purposes is defined as an agricultural holding of one or more acres with sales of agricultural products of \$50.00 or more in the previous year. All persons living on such holdings in rural areas are classed as "rural farm" regardless of their occupation.

² Wentworth County total does not include that part of Burlington that is in Halton County.

Source: Canada, Dominion Bureau of Statistics, Census of Canada, Population, 1966, (Ottawa: Queen's Printer), #92-608, Table 13.

TABLE 4. b

RURAL FARM AND RURAL NON-FARM POPULATION DISTRIBUTION, BRANT COUNTY, 1961 AND 1966

	1961 RURAL					1966 RURAL					PER CENT CHANGE		
	Farm			Non-Farm		Farm			Non-Farm		1966/1961		
	Total No. (1)	No. (2)	% Of Total (3)	No. (4)	% Of Total (5)	Total No. (6)	No. (7)	% Of Total (8)	No. (9)	% Of Total (10)	Total (11)	Farm (12)	Non-Farm (13)
TOWNSHIPS													
Brantford (rural part)	6,224	2,334	37.5	3,890	62.5	6,880	2,120	30.8	4,760	69.2	10.5	-9.2	22.4
Burford (rural part)	4,418	2,688	60.8	1,730	39.2	4,406	2,349	53.3	2,057	46.7	-0.3	-12.6	18.9
Dumfries South	3,241	1,446	44.6	1,795	55.4	3,546	1,340	37.8	2,206	62.2	9.4	-7.3	22.9
Oakland	1,323	485	36.7	838	63.3	1,336	383	28.7	953	71.3	1.0	-21.0	13.7
Onondaga	1,199	742	61.9	457	38.1	1,239	732	59.1	507	40.9	3.3	-1.3	10.9
Indian Reserves	3,799	279	7.3	3,520	92.7	4,009	343	8.6	3,666	91.4	5.5	22.9	4.1
TOTAL, BRANT COUNTY	20,204	7,974	39.5	12,230	60.5	21,416	7,267	33.9	14,149	66.1	6.0	-8.9	15.7

1 A "farm" for census purposes is defined as an agricultural holding of one or more acres with sales of agricultural products of \$50 or more in the previous year. All persons living on such holdings in rural areas are classed as "rural farm" regardless of their occupation.

Source: Canada, Dominion Bureau of Statistics, Census of Canada, Population, 1961 and 1966, Special Tabulation.

TABLE 4. c

RURAL FARM AND RURAL NON-FARM POPULATION DISTRIBUTION, HALDIMAND COUNTY, 1961 AND 1966

	1961 RURAL					1966 RURAL					PER CENT CHANGE		
	Farm ¹		Non-Farm			Farm ¹		Non-Farm			1966/1961		
	Total No. (1)	No. (2)	Total (3)	% Of Total (4)	No. (5)	Total No. (6)	No. (7)	% Of Total (8)	No. (9)	% Of Total (10)	Total (11)	Farm (12)	Non-Farm (13)
VILLAGES													
Cayuga ²	897	29	3.2	868	96.8	-	-	-	-	-	-	-	-
Jarvis	783	13	1.7	770	98.3	824	34	4.1	790	95.9	5.2	161.5	2.6
TOWNSHIPS													
Canborough	1,114	635	57.0	479	43.0	1,263	618	48.9	645	51.1	13.4	-2.7	34.7
Cayuga, North	1,525	903	59.2	622	40.8	1,540	797	51.8	743	48.2	1.0	-11.7	19.5
Cayuga, South	587	439	74.8	148	25.2	637	431	67.7	206	32.3	8.5	-1.8	39.2
Dunn	1,055	390	37.0	665	63.0	1,196	348	29.1	848	70.9	13.4	-10.8	27.5
Moulton	2,160	881	40.8	1,279	59.2	2,403	834	34.7	1,569	65.3	11.3	-5.3	22.7
Oneida	1,542	964	62.5	578	37.5	1,630	1,011	62.0	619	38.0	5.7	4.9	7.1
Rainham	1,790	1,016	56.8	774	43.2	1,835	815	44.4	1,020	55.6	2.5	-19.8	31.8
Seneca	2,086	1,165	55.8	921	44.2	2,253	1,109	49.2	1,144	50.8	8.0	-4.8	24.2
Sherbrooke	375	186	49.6	189	50.4	404	102	25.2	302	74.8	7.7	-45.2	59.8
Walpole	4,083	2,245	55.0	1,838	45.0	3,947	2,083	52.8	1,864	47.2	-3.3	-7.2	1.4
Indian Reserves	746	34	4.6	712	95.4	761	72	9.5	689	90.5	2.0	111.8	-3.2
TOTAL, HALDIMAND COUNTY	18,743	8,900	47.5	9,843	52.5	18,693	8,254	44.2	10,439	55.8	-0.3	-7.3	6.1

1. A "farm" for census purposes is defined as an agricultural holding of one or more acres with sales of agricultural products of \$50 or more in the previous year. All persons living on such holdings in rural areas are classed as "rural farm" regardless of their occupation.

2. Classed as urban in 1966.

- Nil

Source: Canada, Dominion Bureau of Statistics, Census of Canada, Population, 1961 and 1966, Special Tabulation.

TABLE 4. d

RURAL FARM AND RURAL NON-FARM POPULATION DISTRIBUTION, LINCOLN COUNTY, 1961 AND 1966

	1961 RURAL					1966 RURAL					PER CENT CHANGE		
	Total No. (1)	Farm		Non-Farm		Total No. (6)	Farm		Non-Farm		1966/1961		Non-Farm (13)
		No. (2)	Total (3)	% Of Total (5)	No. (4)		Total (3)	% Of Total (8)	No. (9)	Total (10)	Total (11)	(12)	
TOWNSHIPS													
Caistor	1,670	1,040	62.3	630	37.7	1,822	1,276	70.0	546	30.0	9.1	22.7	-13.3
Clinton (rural part)	5,825	2,310	39.7	3,515	60.3	4,628	2,402	51.9	2,226	48.1	-20.5	4.0	-36.7
Gainsborough	2,532	1,511	59.7	1,021	40.3	2,852	1,772	62.1	1,080	37.9	12.6	17.3	5.8
Grimsby, North (rural part)	5,757	1,158	20.1	4,599	79.9	2,924	791	27.1	2,133	72.9	-49.2	-31.7	-53.6
Grimsby, South (rural part)	2,319	725	31.3	1,594	68.7	1,572	804	51.1	768	48.9	-32.2	10.9	-51.8
Louth	5,086	1,822	35.8	3,264	64.2	5,677	2,555	45.0	3,122	55.0	11.6	40.2	-4.4
Niagara	8,616	3,614	41.9	5,002	58.1	9,350	3,999	42.8	5,351	57.2	8.5	10.7	7.0
TOTAL, LINCOLN COUNTY	31,805	12,180	38.3	19,625	61.7	28,825	13,599	47.2	15,226	52.8	-9.4	11.7	-22.4

A "farm" for census purposes is defined as an agricultural holding of one or more acres with sales of agricultural products of \$50 or more in the previous year. All persons living on such holdings in rural areas are classed as "rural farm" regardless of their occupation.

Source: Canada, Dominion Bureau of Statistics, Census of Canada, Population, 1961 and 1966, Special Tabulation.

TABLE 4. e

RURAL FARM AND RURAL NON-FARM POPULATION DISTRIBUTION, WELLAND COUNTY, 1961 AND 1966

	1961 RURAL					1966 RURAL					PER CENT CHANGE				
	Farm ¹			Non-Farm		Farm ¹			Non-Farm		1966/1961			1966/1961	
	Total No. (1)	No. (2)	% Total (3)	No. (4)	% Total (5)	Total No. (6)	No. (7)	% Total (8)	No. (9)	% Total (10)	Total (11)	Farm (12)	Non-Farm (13)	Total (11)	Farm (12)
TOWNSHIPS															
Bertie (rural part)	6,724	557	8.3	6,167	91.7	6,182	1,011	16.4	5,171	83.6	-8.1	81.5	-16.2	-8.1	81.5
Crowland	1,870	413	22.1	1,457	77.9	2,081	302	14.5	1,779	85.5	11.3	-26.9	22.1	11.3	-26.9
Humberstone (rural part)	4,743	779	16.4	3,964	83.6	3,577	980	27.4	2,597	72.6	-24.6	23.8	-34.5	-24.6	23.8
Ilmham	4,795	1,842	38.4	2,953	61.6	5,270	1,410	26.8	3,860	73.2	9.9	-23.5	30.7	9.9	-23.5
Stamford ² (rural part)	1,972	318	16.1	1,654	83.9	-	-	-	-	-	-	-	-	-	-
Thorold (rural part)	4,343	632	14.6	3,711	85.4	4,637	785	16.9	3,852	83.1	6.8	24.2	3.8	6.8	24.2
Mainfleet	4,755	1,497	31.5	3,258	68.5	5,121	1,564	30.5	3,557	69.5	7.7	4.5	9.2	7.7	4.5
Willoughby	1,881	377	20.0	1,504	80.0	2,174	313	14.4	1,861	85.6	15.6	-17.0	23.7	15.6	-17.0
TOTAL, WELLAND COUNTY	31,083	6,415	20.6	24,668	79.4	29,042	6,365	21.9	22,677	78.1	-6.6	-0.8	-8.1	-6.6	-0.8

¹ A "farm" for census purposes is defined as an agricultural holding of one or more acres with sales of agricultural products of \$50 or more in the previous year. All persons living on such holdings in rural areas are classed as "rural farm" regardless of their occupation.

² Stamford Township annexed to City of Niagara Falls January 1, 1963.

- Nil

Source: Canada, Dominion Bureau of Statistics, Census of Canada, Population, 1961 and 1966, Special Tabulation.

TABLE 4. E

RURAL FARM AND RURAL NON-FARM POPULATION DISTRIBUTION, WENTWORTH COUNTY, 1961 AND 1966

	1961 RURAL					1966 RURAL					PER CENT CHANGE		
	Total No. (1)	Farm ¹		Non-Farm		Total No. (6)	Farm ¹		Non-Farm		1966/1961		Non-Farm (13)
		No. (2)	Total (3)	No. (4)	Total (5)		No. (7)	Total (8)	No. (9)	Total (10)	Total (11)	Farm (12)	
TOWNSHIPS													
Ancaster (rural part)	4,279	1,510	35.3	2,769	64.7	4,509	1,634	36.2	2,875	63.8	5.4	8.2	3.8
Beverly	5,023	2,390	47.6	2,633	52.4	5,520	2,224	40.3	3,296	59.7	9.9	-6.9	25.2
Binbrook	2,557	768	30.0	1,789	70.0	3,131	870	27.8	2,261	72.2	22.4	13.3	26.4
Flamborough, East	4,334	1,220	28.1	3,114	71.9	5,089	1,111	21.8	3,978	78.2	17.4	-8.9	27.7
Flamborough, West	7,001	1,076	15.4	5,925	84.6	5,906	1,074	18.2	4,832	81.8	-15.6	-0.2	-18.4
Glanford	4,714	741	15.7	3,973	84.3	5,763	707	12.3	5,056	87.7	22.2	-4.6	27.3
Saltfleet (rural part)	6,588	1,057	16.0	5,531	84.0	7,542	1,098	14.6	6,444	85.4	14.5	3.9	16.5
TOTAL, WENTWORTH COUNTY	34,496	8,762	25.4	25,734	74.6	37,460	8,718	23.3	28,742	76.7	8.6	-0.5	11.7

¹ A "farm" for census purposes is defined as an agricultural holding of one or more acres with sales of agricultural products of \$50 or more in the previous year. All persons living on such holdings in rural areas are classed as "rural farm" regardless of their occupation.

Source: Canada, Dominion Bureau of Statistics, Census of Canada, Population, 1961 and 1966, Special Tabulation.

TABLE 4.2

RURAL FARM AND RURAL NON-FARM POPULATION DISTRIBUTION, NORFOLK COUNTY, 1961 AND 1966

	1961 RURAL					1966 RURAL					PER CENT CHANGE			
	Total No. (1)	Farm ¹		Non-Farm		Total No. (6)	Farm ¹		Non-Farm		Total (11)	1966/1961		
		No. (2)	% Of Total (3)	No. (4)	% Of Total (5)		No. (7)	% Of Total (8)	No. (9)	% Of Total (10)		Farm (12)	Non-Farm (13)	
VILLAGES														
Port Rowan	787	39	5.0	748	95.0	771	24	3.1	747	96.9	-2.0	-38.5	-0.1	
TOWNSHIPS														
Charlottetville	5,380	1,935	36.0	3,445	64.0	5,334	1,814	34.0	3,520	66.0	-0.9	-6.3	2.2	
Houghton	2,276	1,217	53.5	1,059	46.5	2,101	1,121	53.4	980	46.6	-7.7	-7.9	-7.5	
Middleton	3,917	1,537	39.2	2,380	60.8	3,835	1,466	38.2	2,369	61.8	-2.1	-4.6	-0.5	
Townsend	5,421	3,044	56.2	2,377	43.8	5,524	2,925	53.0	2,599	47.0	1.9	-3.9	9.3	
Walsingham, North	2,920	1,485	50.9	1,435	49.1	2,835	1,646	58.1	1,189	41.9	-2.9	10.8	-17.1	
Walsingham, South	2,431	1,231	50.6	1,200	49.4	2,220	958	43.2	1,262	56.8	-8.7	-22.2	5.2	
Windham	5,885	2,743	46.6	3,142	53.4	5,901	2,673	45.3	3,228	54.7	0.3	-2.6	2.7	
Woodhouse	3,992	1,390	34.8	2,602	65.2	3,026	1,312	43.4	1,714	56.6	-24.2	-5.6	-34.1	
TOTAL, NORFOLK COUNTY	33,009	14,621	44.3	18,388	55.7	31,547	13,939	44.2	17,608	55.8	-4.4	-4.7	-4.2	

¹A "farm" for census purposes is defined as an agricultural holding of one or more acres with sales of agricultural products of \$50 or more in the previous year. All persons living on such holdings in rural areas are classed as "rural farm" regardless of their occupation.

Source: Canada, Dominion Bureau of Statistics, Census of Canada, Population, 1961 and 1966, Special Tabulation.

TABLE 5

POPULATION DENSITY BY COUNTIES, NIAGARA REGION AND PROVINCE OF ONTARIO, 1951, 1961 AND 1966

	Land Area (Sq. Miles) (1)	1951			1961			1966		
		Total		Density (Pop. per sq. mi.) (3)	Total		Density (Pop. per sq. mi.) (5)	Total		Density (Pop. per sq. mi.) (7)
		Population No. (2)	Population No. (4)		Population No. (4)	Population No. (6)		Population No. (6)	Population No. (6)	
BRANT	421	72,857	83,839	173.1	83,839	90,945	199.1	90,945	90,945	216.0
HALDIMAND	488	24,138	28,197	49.5	28,197	30,020	57.8	30,020	30,020	61.5
LINCOLN	332	89,366	126,674	269.2	126,674	146,099	381.6	146,099	146,099	440.1
WELLAND	387	123,233	164,741	318.4	164,741	178,818	425.7	178,818	178,818	462.1
WENTWORTH (1)	458	266,083	358,837	581.0	358,837	394,299	783.5	394,299	394,299	860.0
TOTAL, NIAGARA REGION	2,086	575,677	762,288	276.0	762,288	840,181	365.4	840,181	840,181	422.8
NORFOLK	634	42,708	50,475	67.4	50,475	50,578	79.6	50,578	50,578	79.8
TOTAL, NIAGARA REGION INCLUDING NORFOLK	2,720	618,385	812,763	227.3	812,763	890,759	298.8	890,759	890,759	327.5
TOTAL, PROVINCE OF ONTARIO	344,092	4,597,542	6,236,092	13.4 ¹	6,236,092	6,960,870	18.1	6,960,870	6,960,870	20.2

Note: 1966 Densities and all Regional Densities calculated by the Ontario Department of Treasury and Economics, Regional Development Branch.

¹ Revised

(1) Wentworth County total does not include that part of Burlington that is in Halton County.

Source: Canada, Dominion Bureau of Statistics, Census of Canada, Population, 1951, 1961 and 1966 (Ottawa: Queen's Printer), Table 2, Table 2 and Table 9

TABLE b

POPULATION FIVE YEARS OF AGE AND OVER, NOT ATTENDING SCHOOL BY YEARS OF SCHOOLING, COUNTIES, NIAGARA REGION AND PROVINCE OF ONTARIO, 1951 - 1961

		POPULATION 5 YEARS AND OVER					
		Total (1)	Not Attending School ^a (2)	YEARS OF SCHOOLING			
				None ^b (3)	1-8 (4)	9-12 (5)	13 + (6)
BRANT	1951	64,235	52,557	2,366	25,709	19,798	4,684
	%	-	100.0	4.5	48.9	37.7	8.9
	1961	74,837	55,542	3,072	24,543	22,340	5,587
	%	-	100.0	5.5	44.2	40.2	10.1
	% Change 1961/1951	16.5	5.7	29.8	-4.5	12.8	19.3
HALDIMAND	1951	21,302	17,116	797	9,276	5,670	1,373
	%	-	100.0	4.7	54.2	33.1	8.0
	1961	24,998	18,234	1,087	8,789	6,722	1,636
	%	-	100.0	6.0	48.2	36.9	9.0
	% Change 1961/1951	17.4	6.5	36.4	-5.2	18.6	19.2
LINCOLN	1951	79,288	63,919	2,902	28,400	25,382	7,235
	%	-	100.0	4.5	44.4	39.7	11.3
	1961	112,179	82,612	4,985	33,505	32,942	11,180
	%	-	100.0	6.0	40.6	39.9	13.5
	% Change 1961/1951	41.5	29.2	71.8	18.0	29.8	54.5
WELAND	1951	108,839	87,564	4,662	41,499	32,571	8,832
	%	-	100.0	5.3	47.4	37.2	10.1
	1961	145,651	106,332	6,777	46,668	41,225	11,662
	%	-	100.0	6.4	43.9	38.8	11.0
	% Change 1961/1951	33.8	21.4	45.4	12.5	26.6	32.0
WENTWORTH (1)	1951	237,487	197,848	7,793	85,074	84,082	20,899
	%	-	100.0	3.9	43.0	42.5	10.6
	1961	317,047	240,653	13,734	99,312	98,566	29,041
	%	-	100.0	5.7	41.3	41.0	12.1
	% Change 1961/1951	33.5	21.6	76.2	16.7	17.2	39.0
TOTAL, NIAGARA REGION	1951	511,151	419,004	18,520	189,958	167,503	43,023
	%	-	100.0	4.4	45.3	40.0	10.3
	1961	674,712	503,373	29,655	212,817	201,795	59,106
	%	-	100.0	5.9	42.3	40.1	11.7
	% Change 1961/1951	32.0	20.1	60.1	12.0	20.5	37.4
NORFOLK	1951	37,897	29,849	1,396	17,493	8,925	2,035
	%	-	100.0	4.7	58.6	29.9	6.8
	1961	44,810	33,329	1,976	18,055	10,711	2,587
	%	-	100.0	5.9	54.2	32.1	7.8
	% Change 1961/1951	18.2	11.7	41.5	3.2	20.0	27.1
TOTAL NIAGARA REGION INCLUDING NORFOLK	1951	549,048	448,853	19,916	207,451	176,428	45,058
	%	-	100.0	4.4	46.2	39.3	10.0
	1961	719,522	536,702	31,631	230,872	212,506	61,693
	%	-	100.0	5.9	43.0	39.6	11.5
	% Change 1961/1951	31.0	19.6	58.8	11.3	20.4	36.9
TOTAL, PROVINCE OF ONTARIO	1951	4,082,820	3,331,421	157,522	1,534,048	1,274,945	364,906
	%	-	100.0	4.7	46.0	38.3	11.0
	1961	5,495,899	4,123,114	250,328	1,685,916	1,014,214	572,656
	%	-	100.0	6.1	40.9	39.2	13.9
	% Change 1961/1951	34.6	23.8	58.9	9.9	26.6	56.6

-Nil

^a Includes those attending kindergarten.^b Includes those now attending kindergarten and those who attended kindergarten only.

(1) Wentworth County total does not include that part of Burlington that is in Halton County.

Source: Canada, Dominion Bureau of Statistics, Census of Canada, Population, 1951 and 1961, (Ottawa: Queen's Printer), Table 13.

TABLE 7.

NATURAL POPULATION INCREASE AND NET MIGRATION, COUNTIES, NIAGARA REGION AND PROVINCE OF ONTARIO, 1951 TO 1966

	POPULATION			ACTUAL INCREASE				NATURAL INCREASE				NET MIGRATION			
	1951	1961	1966	1966/1951		1966/1961		1966/1951		1966/1961		1966/1951		1966/1961	
	No. (1)	No. (2)	No. (3)	No. (4)	% ^a (5)	No. (6)	% ^b (7)	No. (8)	% ^a (9)	No. (10)	% ^b (11)	No. (12)	% ^a (13)	No. (14)	% ^b (15)
BRANT	72,857	83,839	90,945	18,088	24.8	7,106	8.5	17,110	23.5	5,293	6.3	978	1.3	1,813	2.2
HALDIMAND	24,138	28,197	30,020	5,882	24.4	1,823	6.5	5,498	22.8	1,674	5.9	384	1.6	149	0.5
LINCOLN	89,366	126,674	146,099	56,733	63.5	19,425	15.3	28,340	31.7	9,020	7.1	28,393	31.8	10,405	8.2
WELLAND	123,233	164,741	178,818	55,585	45.1	14,077	8.5	38,828	31.5	11,461	7.0	16,757	13.6	2,616	1.6
WENTWORTH ⁽¹⁾	266,083	358,837	394,299	128,216	48.2	35,462	9.9	81,114	30.5	25,835	7.2	47,102	17.7	9,627	2.7
TOTAL, NIAGARA REGION	575,677	762,288	840,181	264,504	45.9	77,893	10.2	170,890	29.7	53,283	7.0	93,614	16.3	24,610	3.2
NORFOLK	42,708	50,475	50,578	7,870	18.4	103	0.2	9,845	23.1	2,801	5.5	-1,975	-4.6	-2,698	-5.3
TOTAL, NIAGARA REGION INCLUDING NORFOLK	618,385	812,763	890,759	272,374	44.0	77,996	9.6	180,735	29.2	56,084	6.9	91,639	14.8	21,912	2.7
TOTAL, PROVINCE OF ONTARIO	4,597,542	6,236,092	6,960,870	2,363,328	51.4	724,778	11.6	1,441,345	31.4	487,852	7.8	921,983	20.1	236,926	3.8

(1)Wentworth County total does not include that part of Burlington that is in Halton County.

^aPer cent of 1951 population.^bPer cent of 1961 population.Source: Canada, Dominion Bureau of Statistics, Census of Canada, Population, 1961 and 1966, (Ottawa: Queen's Printer), Volume 7.1, Table 2, and Special Tabulation.

TABLE 8.

AVERAGE INCOME PER TAXPAYER, SELECTED LOCALITIES, COUNTIES, NIAGARA REGION AND PROVINCE OF ONTARIO, 1951, 1961 AND 1966

	AVERAGE INCOME PER TAXPAYER			% CHANGE	
	1951	1961	1966	1966/1951	1966/1961
	\$ (1)	\$ (2)	\$ (3)	(4)	(5)
BRANT	3,042	4,218	4,971	63.4	17.9
Brantford	3,070	4,215	5,044	64.3	19.7
HALDIMAND	2,965	4,097	4,780	61.2	16.7
LINCOLN	3,197	4,541	5,632	76.2	24.0
St. Catharines	3,233	4,590	5,683	75.8	23.8
WELLAND	3,212	4,499	5,322	65.7	18.3
Niagara Falls	3,210	4,444	5,363	67.1	20.7
Port Colborne	n.a.	4,394	5,322	n.a.	21.1
Welland	3,310	4,382	5,254	58.7	19.9
WENTWORTH ⁽¹⁾	3,198	4,637	5,575	74.3	20.2
Hamilton	3,170	4,643	5,575	75.9	20.1
TOTAL, NIAGARA REGION	3,180	4,541	5,457	71.6	20.2
NORFOLK	3,256	4,658	5,015	54.0	7.7
TOTAL, NIAGARA REGION INCLUDING NORFOLK COUNTY	3,182	4,545	5,438	70.9	19.6
TOTAL, PROVINCE OF ONTARIO	3,163	4,498	5,398	70.7	20.0

(1) Data on Burlington are not available.

n.a. Not available.

Source: Department of National Revenue, Taxation Division, Taxation Statistics, 1953, 1963 and 1968, Table 5, Table 5 and Table 6.

TABLE 9.

AVERAGE PERSONAL INCOME BY COUNTIES, NIAGARA REGION AND PROVINCE
OF ONTARIO, 1961 AND 1966

	AVERAGE PERSONAL INCOME		
			% Change
	1961	1966	1966/1961
	\$	\$	%
	(1)	(2)	(3)
BRANT	3,499	4,292	22.66
HALDIMAND	3,295	3,827	16.15
LINCOLN	3,807	4,901	28.74
WELLAND	3,758	4,565	21.47
WENTWORTH (1)	4,004	4,947	23.55
NORFOLK	3,564	4,193	17.65
TOTAL, PROVINCE OF ONTARIO	3,825	4,686	22.51

(1) Wentworth County does not include that part of Burlington that is in Halton County.

Source: Taxation Statistics, Department of National Revenue,
Taxation, 1963 and 1968, Table 5 and Table 6.

TABLE 10.

PER CAPITA AND PER HOUSEHOLD INCOME, COUNTIES, CITIES, NIAGARA REGION AND PROVINCE OF ONTARIO, 1951, 1961 AND 1966

		POPULATION ESTIMATES			Net Dollars ^c ('000's)	EFFECTIVE BUYING INCOME ^c			DISTRIBUTION OF HOUSEHOLD INCOME ^f				
		Total ^a Households(1) as % of Region				% Of Region	Per Capited \$	Per Household \$	A Z	B Z	C Z	D Z	E Z
		(1)	(2)	(3)									
BRANT	1951	73.7	21.9	11.8	91,499	10.4	1,242	4,178	n.a.	n.a.	n.a.	n.a.	n.a.
	1961	84.6	23.1	10.3	134,321	9.9	1,588	5,815	15.3	21.9	45.3	12.9	4.6
	1966	91.7	25.7	10.2	195,374	10.1	2,131	7,602	12.6	21.6	39.6	15.2	11.0
	% Change 1966/1951	24.4	17.4	11.3	113.5		71.6	82.0					
	% Change 1966/1961	8.4	11.3		45.5		34.2	30.7					
Brentford	1951	37.2	11.2	5.9	50,134	5.7	1,348	4,476	n.a.	n.a.	n.a.	n.a.	n.a.
	1961	55.7	15.7	6.8	94,448	6.9	1,696	6,016	14.1	21.4	45.9	13.4	5.2
	1966	59.7	17.3	6.6	132,053	6.8	2,212	7,633	11.8	21.2	39.7	15.5	11.8
	% Change 1966/1951	60.5	54.5		163.4		64.1	70.5					
	% Change 1966/1961	7.2	10.2		39.8		30.4	26.9					
BALDWIN	1951	24.3	6.7	3.9	24,124	2.7	993	3,601	n.a.	n.a.	n.a.	n.a.	n.a.
	1961	28.4	7.7	3.5	34,890	2.6	1,229	4,531	29.3	27.2	34.5	7.4	1.6
	1966	30.2	8.3	3.4	50,117	2.6	1,660	6,038	22.7	25.2	33.6	10.8	5.7
	% Change 1966/1951	24.3	23.9		107.7		67.2	67.7					
	% Change 1966/1961	6.3	7.8		43.6		35.1	33.3					
LINCOLN	1951	90.5	27.2	14.5	124,562	14.2	1,376	4,579	n.a.	n.a.	n.a.	n.a.	n.a.
	1961	128.4	35.8	15.6	235,377	17.3	1,833	6,575	12.5	18.6	43.3	18.1	7.5
	1966	147.9	40.6	16.4	333,388	17.2	2,254	8,212	10.7	19.3	37.6	17.4	15.0
	% Change 1966/1951	63.4	49.3		167.6		63.8	79.3					
	% Change 1966/1961	15.2	13.4		41.6		23.0	24.9					
St. Catharines	1951	38.4	11.6	6.1	59,632	6.8	1,553	5,141	n.a.	n.a.	n.a.	n.a.	n.a.
	1961	85.6	25.9	10.4	171,164	12.6	2,000	6,609	10.9	17.7	43.5	18.8	9.1
	1966	96.7	26.8	10.8	219,881	11.3	2,274	8,205	9.1	18.4	37.4	17.9	17.2
	% Change 1966/1951	151.8	131.0		268.7		46.4	59.6					
	% Change 1966/1961	13.0	3.5		28.5		13.7	24.1					
WELLAND	1951	124.8	36.3	19.9	186,954	21.3	1,698	5,150	n.a.	n.a.	n.a.	n.a.	n.a.
	1961	166.5	43.7	20.2	275,439	20.2	1,654	6,303	11.1	18.7	46.0	18.8	5.4
	1966	180.4	49.8	20.1	401,841	20.7	2,228	8,069	9.4	19.2	39.0	18.3	14.1
	% Change 1966/1951	44.6	37.2		114.9		48.7	56.7					
	% Change 1966/1961	8.3	14.0		45.9		34.7	28.0					
Niagara Falls	1951	23.1	7.0	3.7	37,150	4.2	1,608	5,307	n.a.	n.a.	n.a.	n.a.	n.a.
	1961	22.2	6.0	2.7	39,107	2.9	1,762	6,518	12.2	18.6	44.2	18.9	6.1
	1966	56.7	16.3	6.3	133,154	6.9	2,348	8,189	10.2	19.2	38.2	18.1	14.3
	% Change 1966/1951	145.5	132.9		258.4		46.0	53.9					
	% Change 1966/1961	155.4	171.7		240.5		33.3	25.3					
Welland	1951	15.5	4.5	2.5	23,508	2.7	1,517	5,224	n.a.	n.a.	n.a.	n.a.	n.a.
	1961	36.4	9.7	4.4	70,529	5.2	1,938	7,271	6.8	16.3	46.7	19.4	10.8
	1966	40.0	10.4	4.5	93,286	4.8	2,332	8,970	6.2	17.4	38.5	18.6	19.3
	% Change 1966/1951	158.1	131.1		296.8		53.7	71.7					
	% Change 1966/1961	9.9	7.2		32.3		20.3	23.4					
WATERLOO (1)	1951	269.2	80.9	43.0	414,656	47.2	1,540	5,126	n.a.	n.a.	n.a.	n.a.	n.a.
	1961	363.8	95.8	44.2	620,881	45.6	1,707	6,481	12.7	19.1	44.2	17.8	6.2
	1966	397.5	106.8	44.2	875,500	45.2	2,203	8,213	10.6	19.5	38.4	17.5	14.0
	% Change 1966/1951	47.7	32.0		111.1		43.1	60.2					
	% Change 1966/1961	9.3	11.5		41.0		29.1	26.7					
Hamilton	1951	210.8	64.1	33.7	333,200	37.9	1,581	5,198	n.a.	n.a.	n.a.	n.a.	n.a.
	1961	277.8	73.6	33.8	484,866	35.6	1,745	6,588	12.3	19.0	44.4	17.7	6.6
	1966	299.5	81.1	33.3	675,393	34.8	2,255	8,328	10.2	19.4	38.5	17.5	14.4
	% Change 1966/1951	42.1	26.5		102.7		42.6	60.2					
	% Change 1966/1961	7.8	10.2		39.3		29.2	26.4					

TABLE 10.

PER CAPITA AND PER HOUSEHOLD INCOME, COUNTIES, CITIES, NIAGARA REGION AND PROVINCE OF ONTARIO, 1951, 1961 AND 1966 (Cont'd.)

		POPULATION ESTIMATES			EFFECTIVE BUYING INCOME ^c				DISTRIBUTION OF HOUSEHOLD INCOME ^f							
		Total ^a Households ^b (1) as % of		Region	Net Dollars ('000's)	% Of Region	Per Capita ^d Household ^e		A %	B %	C %	D %	E %			
		(1)	(2)				(3)	(4)						(5)	(6)	(7)
TOTAL, NIAGARA REGION																
	1951	582.5	173.0		841,795		1,445	4,866								
	1961	771.7	206.1		1,300,908		1,686	6,312								
	1966	847.7	231.2		1,856,220		2,190	8,029								
% Change 1966/1951		45.5	33.6		120.5		51.6	65.0								
% Change 1966/1961		9.8	12.2		42.7		29.9	27.2								
NORFOLK																
	1951	43.1	12.6	6.9	37,033	4.2	859	2,939	n.a.	n.a.	n.a.	n.a.	n.a.			
	1961	50.9	14.1	6.2	59,405	4.4	1,167	4,213	36.2	28.6	26.6	6.4	2.2			
	1966	51.0	14.3	5.7	81,913	4.2	1,606	5,728	27.2	25.8	31.9	9.2	5.9			
% Change 1966/1951		18.3	13.5		121.2		87.0	94.9								
% Change 1966/1961		0.2	1.4		37.9		37.6	36.0								
TOTAL, NIAGARA REGION INCLUDING NORFOLK																
	1951	625.6	185.6	100.0	878,828	100.0	1,405	4,735								
	1961	822.6	220.2	100.0	1,360,313	100.0	1,654	6,178								
	1966	898.7	245.5	100.0	1,938,133	100.0	2,157	7,895								
% Change 1966/1951		43.7	32.3		120.5		53.5	66.7								
% Change 1966/1961		9.3	11.5		42.5		30.4	27.8								
TOTAL, PROVINCE OF ONTARIO																
	1951	4,635.5	1,320.7		6,333,714		1,366	4,796	n.a.	n.a.	n.a.	n.a.	n.a.			
	1961	6,332.0	1,625.9		10,157,578		1,604	6,247	17.6	20.9	39.9	15.2	6.4			
	1966	7,035.6	1,868.4		14,891,868		2,117	7,970	13.7	20.4	36.6	15.7	13.6			
% Change 1966/1951		51.8	41.5		135.1		55.0	66.2								
% Change 1966/1961		11.1	14.9		46.6		32.0	27.6								

(1) Data on Burlington is not available.

n.a. Not available.

^a Population estimated as of December 31 of each year.^b Includes all persons occupying a house, apartment, or other group of rooms, or a room that constitutes "separate living quarters"; as well as unrelated persons (lodgers, servants, hired hands) who share living quarters; also a person living alone, or a group of unrelated persons sharing the same living quarters.^c Effective Buying Income, or disposable income, includes wages, salaries, dividends, entrepreneurial and farm income imputed rentals - less income taxes.^d Per Capita Income is Net Effective Buying Income divided by Total Population.^e Per Household Income is Net Effective Buying Income divided by Total Households.^f 1959 - 1965: A = \$0 - 2,499; B = \$2,500 - 3,999; C = \$4,000 - 6,999; D = \$7,000 - 9,999; E = \$10,000 and over.

1966: A = \$0 - 2,999; B = \$3,000 - 4,999; C = \$5,000 - 7,999; D = \$8,000 - 9,999; E = \$10,000 and over.

Source: Sales Management Magazine, 1952, 1962 and 1967.

TABLE 12.

WORKING AGE POPULATION, EXPERIENCED LABOUR FORCE AND TOTAL PARTICIPATION RATES BY COUNTIES, NIAGARA REGION AND PROVINCE OF ONTARIO, 1951 AND 1961

	1951				1961				PARTICIPATION RATE % Change 1961/1951 %
	Population		Labour Force		Population		Labour Force		
	14 Years of Age And Over		Participation Rate		15 Years of Age And Over		Participation Rate		
	No. (1)	(2)	% (3)		No. (4)	(5)	% (6)	(7)	
BRANT	53,554	28,763	53.71		57,273	31,223	54.52	1.5	
HALDIMAND	17,408	9,039	51.92		18,796	10,167	54.09	4.2	
LINCOLN	65,831	36,268	55.09		85,499	46,371	54.24	-1.5	
WELLAND	89,947	50,310	55.93		110,012	58,269	52.97	-5.3	
WENTWORTH (1)	202,138	116,047	57.41		246,593	138,717	56.25	-2.0	
TOTAL, NIAGARA REGION	428,878	240,427	56.06		518,173	284,747	54.95	-2.0	
MORFOLK	30,800	16,554	53.75		34,243	19,469	56.86	5.8	
TOTAL, NIAGARA REGION INCLUDING MORFOLK	459,678	256,981	55.90		552,416	304,216	55.07	1.5	
TOTAL, PROVINCE OF ONTARIO	3,418,502	1,884,941	55.14		4,228,343	2,393,015	56.59	2.6	

(1) Wentworth County does not include that part of Burlington that is in Halton County.

Source: Canada, Dominion Bureau of Statistics, Census of Canada, Labour Force, 1951 and 1961 (Ottawa: Queen's Printer), Table 2 and Table 6.

TABLE 13.

LABOUR FORCE PARTICIPATION RATES BY SEX, COUNTIES, NIAGARA REGION AND PROVINCE OF ONTARIO, 1951 AND 1961

	1951					1961					PARTICIPATION RATE	
	Population					Population					% Change	
	14 Years of Age					15 Years of Age					1961/1951	
	Male No. (1)	Female No. (2)	Male % (3)	Female % (4)	Participation Rate	Male No. (5)	Female No. (6)	Male % (7)	Female % (8)	Participation Rate	Male % (9)	Female % (10)
BRANT	26,402	27,152	82.6	25.7		27,977	29,296	78.2	32.2		-5.3	25.3
HALDIMAND	8,810	8,598	85.1	18.0		9,483	9,313	80.8	27.4		-5.1	52.2
LINCOLN	32,765	33,066	86.4	24.3		42,087	43,412	80.4	29.4		-6.9	21.0
WELLAND	45,887	44,060	86.6	24.1		54,842	55,170	79.1	27.6		-8.7	14.5
WENTWORTH ⁽¹⁾	99,853	102,285	86.1	29.5		121,001	125,592	82.1	32.3		-4.6	8.8
TOTAL, NIAGARA REGION	213,717	215,161	85.8	26.7		255,390	262,783	80.7	30.6		-5.9	14.6
NORFOLK	15,704	15,096	84.4	22.1		17,374	16,869	79.5	33.7		-5.8	52.5
TOTAL, NIAGARA REGION INCLUDING NORFOLK	229,421	230,557	85.7	26.4		272,764	279,652	80.6	30.8		-6.0	16.7
TOTAL, PROVINCE OF ONTARIO	1,171,373	1,707,129	84.2	26.1		2,106,048	2,122,295	81.1	32.9		-3.7	26.1

(1)Wentworth County does not include that part of Burlington that is in Halton County

Source: Canada, Dominion Bureau of Statistics, Census of Canada, Labour Force, 1951 and 1961, (Ottawa: Queen's Printer), Volume V, Table 2 and Volume 3.3, Table 6.

LAND AREA, TOTAL FARMLAND, IMPROVED FARMLAND, TOWNSHIPS, COUNTIES, NIAGARA REGION, 1951, 1961 AND 1966

LAND AREA (Acres)	TOTAL LAND AREA (Acres)	FARMLAND			IMPROVED FARMLAND				
		1951 (Acres)	1961 (Acres)	1966 (Acres)	1951 (Acres)	1961 (Acres)	1966 (Acres)	% Change 1966/1951	% Change 1966/1961
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
BRANT	269,440	223,402	204,451	209,065	174,392	166,015	173,118	-0.7	4.3
Brantford	66,080	64,703	67,726	67,355	51,535	53,833	59,005	10.2	9.6
Burlington	68,755	63,749	61,481	60,371	46,262	46,586	47,325	2.3	1.7
Dumfries, South	46,861	44,386	44,705	45,371	33,391	35,785	36,273	8.6	1.4
Oakland	11,520	9,288	9,317	8,470	7,466	7,471	7,531	-9.6	-9.6
Orondaga	23,309	21,055	20,795	20,507	18,546	18,379	18,540	x	0.9
Indian Reserves	43,162	20,221	5,407	6,971	15,192	3,992	5,244	-65.5	31.4
HALDIMAND	312,320	278,378	269,237	267,826	228,445	227,129	227,568	-0.4	0.2
Cambridge	19,823	19,645	20,659	20,659	15,008	17,174	17,174	14.4	7.5
Cayuga, North	33,574	32,780	32,589	32,714	26,175	26,696	27,263	4.2	2.1
Cayuga, South	15,162	13,053	12,254	12,356	11,036	10,249	9,996	-9.4	-2.5
Dunn	16,864	13,589	12,866	12,418	11,550	10,735	10,680	-7.5	-0.5
Moulton	29,082	24,195	21,054	20,971	17,635	16,427	16,727	-5.1	1.8
Oneida	42,374	32,680	32,969	34,653	27,923	28,238	30,418	8.9	7.7
Rainham	26,861	25,665	26,102	25,210	20,628	22,424	21,980	6.6	-2.0
Seneca	43,571	38,741	39,531	38,003	32,335	33,335	32,285	-0.1	-3.2
Sherbrooke	5,581	5,635	4,559	4,060	4,161	3,519	2,984	-14.3	-14.3
Walpole	70,778	67,164	66,125	64,837	58,566	58,494	56,760	-3.1	-3.0
Indian Reserves	8,525	5,053	1,543	1,945	3,455	1,030	1,301	-62.3	26.3
LINCOLN	212,480	178,614	165,853	160,789	151,440	140,665	137,006	-9.5	-2.6
Calstar	33,651	30,637	28,934	28,435	24,922	23,737	22,678	-9.0	-4.5
Clinton	27,027	24,013	22,975	22,762	20,288	19,436	19,436	-4.2	-2.0
Gainsborough	42,182	38,260	37,648	37,054	32,076	31,581	31,513	-1.8	-0.2
Grimsby, North	10,554	14,097	12,569	11,816	11,919	10,552	9,894	-17.0	-6.2
Grimsby, South	19,904	18,141	16,462	16,573	15,794	14,123	14,075	-10.9	-0.3
Louth	18,861	19,141	17,642	16,542	15,801	14,932	14,260	-9.8	-4.5
Niagara	33,261	19,808	29,623	27,607	17,758	25,908	25,150	41.6	-2.9
WELLAND	247,680	155,444	125,707	123,452	121,310	99,226	102,683	-15.4	3.5
Bertie	28,275	20,803	16,247	15,712	17,180	13,369	13,187	-23.2	-1.4
Crowland	17,646	12,456	7,832	7,926	9,462	5,684	6,592	-30.3	16.0
Humberstone	11,091	17,155	15,384	17,419	12,674	12,368	14,244	14.8	17.6
Niagara Falls	27,168	-	-	6,871	-	-	6,084	-	-
Pelham	29,574	23,517	22,540	20,035	18,395	17,132	16,801	-8.7	-1.9
Thorold	22,611	16,518	13,030	11,322	14,048	10,316	9,143	-34.9	-11.4
Wainfleet	53,869	40,675	34,998	36,733	31,359	28,563	30,963	-1.3	8.4
Willoughby	27,775	12,595	8,446	7,434	9,083	5,704	5,369	-40.9	-5.9
WENTWORTH (1)	293,120	232,659	198,139	180,424	179,806	156,385	147,410	-18.0	-5.7
Ancaster	43,635	39,060	34,038	32,173	31,694	27,902	26,753	-15.6	-4.1
Beverly	73,005	65,279	58,353	50,026	42,430	40,816	37,722	-11.1	-7.6
Binbrook	27,277	25,840	24,234	24,108	22,646	21,289	21,516	-5.0	1.1
Framborough, East	28,077	22,267	21,879	21,643	19,425	16,137	16,295	-16.1	1.0
Framborough, West	10,618	26,027	20,294	16,719	20,103	15,507	13,560	-32.5	-12.6
Glanford	23,110	22,430	18,870	17,123	19,479	17,376	15,515	-20.4	-10.7
Saltille	23,680	21,652	20,083	18,396	19,732	17,358	16,049	-18.7	-7.5
NORFOLK	405,760	345,421	338,426	334,126	254,507	255,965	255,057	0.2	-0.4
Charlottetown	61,312	44,471	44,685	42,255	29,498	30,594	29,206	-1.0	-4.5
Houghton	34,842	30,744	30,021	28,438	20,319	20,131	19,407	-4.5	-3.6
Middleton	46,963	42,146	40,141	40,754	30,028	30,399	30,799	2.6	-1.3
Northampton	66,099	63,888	63,595	62,168	51,186	52,692	52,444	2.5	-0.5
Walsingham, North	42,368	37,568	38,949	39,234	27,255	29,541	28,774	5.6	-2.6
Walsingham, South	52,205	30,838	28,277	27,686	21,436	20,166	19,995	-6.7	-0.8
Windham	68,294	61,811	62,407	64,239	46,443	47,729	49,815	7.3	4.4
Woodhouse	36,243	33,955	30,351	29,352	28,342	24,713	24,617	-13.1	-0.4

x Less than 0.05 per cent.

(1) Nil

(1) Wentworth County total does not include that part of Burlington that is in Halton County.

Source: Canada, Dominion Bureau of Statistics, Census of Canada, Agriculture, 1951, 1961 and 1966 (Ottawa: Queen's Printer), Table 29 and 16, 28 and 12, 27 and 13.

TABLE 15.

FARMLAND AS A PERCENTAGE OF TOTAL LAND AREA, TOWNSHIPS, COUNTIES, NIAGARA REGION, 1951, 1961 AND 1966

	1951	1961	1966
	%	%	%
	(1)	(2)	(3)
BRANT	82.9	75.9	77.6
Brantford	97.9	100.0	100.0
Burford	92.7	89.4	87.8
Dumfries, South	94.7	95.4	96.8
Oakland	80.6	81.1	73.5
Onondaga	86.3	89.2	88.0
Indian Reserves	46.8	12.5	16.2
HALDIMAND	89.1	86.2	85.8
Canborough	88.8	88.0	92.5
Cayuga, North	97.1	96.5	96.9
Cayuga, South	86.1	80.8	81.5
Dunn	80.6	76.3	73.6
Moulton	83.2	72.4	72.1
Oneida	77.1	77.8	81.8
Rainham	95.6	97.2	93.9
Seneca	88.9	90.7	87.2
Sherbrooke	100.0	81.7	72.8
Walpole	94.9	93.4	91.6
Indian Reserves	59.3	18.1	22.8
LINCOLN	84.1	77.9	75.7
Caistor	91.0	86.0	84.5
Clinton	88.8	85.0	84.2
Gainsborough	90.7	89.3	87.8
Grimsby, North	100.0	100.0	100.0
Grimsby, South	91.1	82.7	83.3
Louth	100.0	93.5	87.7
Niagara	59.6	89.1	83.0
WELLAND	72.8	50.8	49.8
Bertie	73.6	57.5	55.6
Crowland	71.4	44.9	45.4
Humberstone	55.2	49.5	56.0
Niagara Falls	-	-	-
Pelham	79.5	76.2	67.8
Thorold	73.1	57.6	50.1
Wainfleet	75.5	65.0	68.2
Willoughby	45.4	30.5	26.8
WENTWORTH	79.4	67.6	61.6
Ancaster	89.5	78.0	73.7
Beverly	89.4	79.9	68.5
Binbrook	94.7	88.8	88.4
Flamborough, East	98.5	79.3	77.9
Flamborough, West	85.0	66.3	54.6
Glanford	97.1	81.7	74.1
Saltfleet	91.4	84.8	77.7
NORFOLK	85.1	83.4	82.4
Charlotteville	72.5	72.9	68.9
Houghton	88.2	86.2	81.6
Middleton	89.7	85.5	86.8
Townsend	96.7	96.2	94.1
Walsingham, North	88.7	91.9	92.6
Walsingham, South	59.1	54.2	53.0
Windham	90.5	91.4	94.1
Woodhouse	93.7	83.7	81.0

- Nil

Source: Canada, Dominion Bureau of Statistics, Census of Canada, Agriculture, 1951, 1961 and 1966 (Ottawa: Queen's Printer), Tables 29 and 16, 28 and 12, 27 and 13.

TABLE 16.

IMPROVED FARMLAND AS A PERCENTAGE OF TOTAL FARMLAND, TOWNSHIPS, COUNTIES,
 NIAGARA REGION, 1951, 1961 AND 1966

	1951	1961	1966
	%	%	%
	(1)	(2)	(3)
BRANT	78.1	81.2	82.8
Brantford	82.7	79.5	87.6
Burford	72.6	75.7	78.4
Dumfries, South	75.2	80.0	79.9
Oakland	80.4	80.0	79.7
Onondaga	88.1	88.4	90.4
Indian Reserves	75.1	73.8	75.2
HALDIMAND	82.1	84.4	85.0
Canborough	75.7	81.4	83.1
Cayuga, North	79.9	81.9	83.3
Cayuga, South	84.5	83.6	80.9
Dunn	85.0	83.4	86.0
Moulton	72.9	78.0	79.8
Oneida	85.4	85.7	87.8
Rainham	80.4	85.9	87.2
Seneca	83.4	84.3	85.0
Sherbrooke	73.8	77.2	73.5
Walpole	87.2	88.5	87.5
Indian Reserves	68.4	66.8	66.9
LINCOLN	84.8	84.8	85.2
Caistor	81.3	82.0	79.8
Clinton	84.5	86.3	85.4
Gainsborough	83.8	83.9	85.0
Grimsby, North	84.5	84.0	83.7
Grimsby, South	87.1	85.8	84.9
Louth	82.6	84.6	86.2
Niagara	89.7	87.5	91.1
WELLAND	78.0	78.9	83.2
Bertie	82.6	82.3	83.9
Crowland	76.0	72.6	83.2
Humberstone	73.9	80.4	83.5
Niagara Falls	-	-	88.5
Pelham	78.2	76.0	83.9
Thorold	85.0	79.2	80.8
Wainfleet	77.1	81.6	84.3
Willoughby	72.1	67.5	72.2
WENTWORTH	77.3	78.9	81.7
Ancaster	81.1	82.0	83.2
Beverly	65.0	69.9	75.4
Binbrook	87.6	87.8	89.2
Flamborough, East	70.3	72.5	74.5
Flamborough, West	77.2	76.4	81.1
Glanford	86.8	92.1	90.6
Saltfleet	91.1	86.4	87.2
NORFOLK	73.7	75.6	76.3
Charlotteville	66.3	68.5	69.1
Houghton	66.1	67.1	68.2
Middleton	71.2	75.7	75.6
Townsend	80.1	82.9	84.4
Walsingham, North	72.5	75.8	73.3
Walsingham, South	69.5	71.3	72.2
Windham	75.1	76.5	77.5
Woodhouse	83.5	81.4	83.9

- Nil

Source: Canada, Dominion Bureau of Statistics, Census of Canada, Agriculture, 1951, 1961 and 1966 (Ottawa: Queen's Printer), Tables 29 and 16, 28 and 12, 27 and 13.

TABLE 17.

NUMBER, AREA AND AVERAGE SIZE OF FARMS, COUNTIES, NIAGARA REGION, 1951, 1961 AND 1966

	TOTAL NUMBER OF FARMS			TOTAL AREA OF FARMS		% CHANGE 1966/1951		% CHANGE 1966/1961		Average Area Per Farm (Acres)
	Number (1)	% Of Regional Total (2)	Area (Acres) (3)	% Of Regional Total (4)	Number Of Farms (5)	Total Area Of Farms (6)	Number Of Farms (7)	Total Area Of Farms (8)		
BRANT	1951	2,236	17.1	20.9	-27.6	-6.4	-8.6	2.2	99.9	
	1961	1,771	16.2	21.2					115.4	
	1966	1,618	15.9	209,045	22.2				129.2	
HALDIMAND	1951	2,370	18.2	26.1	-18.3	-3.8	-6.4	-0.5	117.5	
	1961	2,070	18.9	269,237	27.9				130.1	
	1966	1,937	19.0	267,826	28.4				138.3	
LINCOLN	1951	3,503	26.9	178,614	-10.6	-10.0	-3.3	-3.1	51.0	
	1961	3,238	29.6	165,853					51.2	
	1966	3,130	30.7	160,789	17.1				51.4	
WELLAND	1951	2,035	15.6	155,444	-30.6	-20.6	-5.4	-1.8	76.4	
	1961	1,494	13.7	125,707					84.1	
	1966	1,413	13.8	123,452	13.1				87.4	
WENTWORTH	1951	2,895	22.2	232,659	-27.1	-22.5	-10.9	-8.9	80.4	
	1961	2,367	21.6	198,139					83.7	
	1966	2,110	20.7	180,424	19.2				85.5	
TOTAL, NIAGARA REGION	1951	13,039	100.0	1,068,497	-21.7	-11.9	-6.7	-2.3	81.9	
	1961	10,940	100.0	963,387					88.1	
	1966	10,208	100.0	941,536	100.0				92.2	
NORFOLK	1951	3,657	21.9 ^a	345,421	-16.3	-3.3	-7.6	-1.3	94.5	
	1961	3,311	23.2 ^a	338,426					102.2	
	1966	3,060	23.1 ^a	334,126	26.2				109.2	
TOTAL, NIAGARA REGION INCLUDING NORFOLK	1951	16,696	100.0	1,413,918	-20.5	-9.8	-6.9	-2.0	84.7	
	1961	14,251	100.0	1,301,813					91.3	
	1966	13,268	100.0	1,275,662	100.0				96.1	

^aPercentage of Niagara Region total, including Norfolk County.Source: Canada, Dominion Bureau of Statistics, Census of Canada, Agriculture, 1951, 1961 and 1966 (Ottawa: Queen's Printer), Table 16, Table 12 and Table 13.

TABLE 18

FARM CAPITAL VALUE, DOLLAR VALUE PER ACRE, COUNTIES, NIAGARA REGION, 1951, 1961 AND 1966

	1951			1961			1966			% Change In		Change In \$ Value Per Acre 1966/1951 (12)
	Total Value (\$'000's) (1)	\$ Value Per Acre (2)	% Of Total Value Per Acre (3)	Total Value (\$'000's) (4)	\$ Value Per Acre (5)	% Of Total Value Per Acre (6)	Total Value (\$'000's) (7)	\$ Value Per Acre (8)	% Of Total Value Per Acre (9)	1966/1951 1966/1961		
										(10)	(11)	
BRANT												
Land and Buildings	47,951	125	82	54,757	312	76	76,838	368	75	174.6	20.5	194.4
Machinery and Equipment	7,563	34	17	12,369	60	14	16,128	77	16	113.3	30.4	
Livestock and Poultry	9,720	44	21	8,135	40	10	9,207	44	9	-5.3	13.2	
TOTAL	45,264	203	100	84,261	412	100	102,173	489	100	125.7	21.3	
HALDIMAND												
Land and Buildings	19,588	70	52	37,972	141	65	48,654	182	66	148.4	28.1	160.0
Machinery and Equipment	7,806	28	21	10,716	40	18	13,866	52	19	77.6	29.4	
Livestock and Poultry	10,184	37	27	9,771	36	17	11,661	43	15	14.5	19.3	
TOTAL	37,578	135	100	58,459	217	100	74,181	277	100	97.4	26.9	
LINCOLN												
Land and Buildings	58,026	325	79	93,613	564	83	127,711	794	82	120.1	36.4	144.3
Machinery and Equipment	10,704	60	15	13,462	81	12	18,281	114	12	70.8	35.8	
Livestock and Poultry	4,897	27	6	5,053	31	5	9,338	58	6	90.7	84.8	
TOTAL	73,627	412	100	112,127	676	100	155,330	966	100	111.0	38.5	
WELLAND												
Land and Buildings	20,941	135	68	34,285	273	76	44,160	358	77	110.9	28.8	165.2
Machinery and Equipment	5,416	35	18	6,548	52	15	8,926	72	15	64.8	36.3	
Livestock and Poultry	4,536	29	14	4,004	32	9	4,545	37	8	-0.2	13.5	
TOTAL	30,912	199	100	44,837	357	100	57,631	467	100	86.4	28.5	
WENTWORTH (1)												
Land and Buildings	34,422	148	65	67,417	340	78	80,957	449	78	135.2	20.1	203.4
Machinery and Equipment	8,846	38	16	11,647	59	13	13,984	77	13	58.1	20.1	
Livestock and Poultry	9,971	43	19	7,898	40	9	8,986	50	9	-9.9	13.8	
TOTAL	53,239	229	100	86,963	439	100	103,927	576	100	95.2	19.5	
TOTAL, NIAGARA REGION												
Land and Buildings	160,958	151	67	297,044	308	77	378,320	402	77	135.0	27.4	199.3
Machinery and Equipment	40,335	38	17	54,742	57	14	71,185	76	14	76.5	30.0	
Livestock and Poultry	39,328	37	16	34,861	36	9	43,737	46	9	11.2	25.5	
TOTAL	240,621	226	100	386,647	401	100	493,242	524	100	105.0	27.6	
NORFOLK												
Land and Buildings	83,681	242	80	170,558	504	84	179,932	539	82	115.0	5.5	122.7
Machinery and Equipment	13,034	38	13	26,229	77	13	32,399	97	15	148.6	23.5	
Livestock and Poultry	7,572	22	7	5,632	17	3	6,877	20	3	-9.2	22.1	
TOTAL	104,287	302	100	202,419	598	100	219,208	656	100	110.2	8.3	
TOTAL, NIAGARA REGION INCLUDING NORFOLK												
Land and Buildings	244,639	173	71	467,602	359	79	558,252	438	78	128.2	19.4	15.2
Machinery and Equipment	53,369	38	15	80,971	62	14	103,584	81	15	94.1	27.9	
Livestock and Poultry	46,900	33	14	40,493	31	7	50,614	40	7	7.9	25.0	
TOTAL	344,908	244	100	589,066	452	100	712,450	559	100	106.6	20.9	

(1) Wentworth County total does not include that part of Burlington that is in Halton County.

Source: Canada, Dominion Bureau of Statistics, Census of Canada, Agriculture, 1951, 1961 and 1966 (Ottawa: Queen's Printer), Tables 30 and 16, 18 and 12, 22 and 14.

TABLE 19.

COMMERCIAL FARMS CLASSIFIED BY ECONOMIC CLASS OF FARM, COUNTIES, NIAGARA REGION, 1961 AND 1966

			COMMERCIAL FARMS ^a						OTHER FARMS				TOTAL CENSUS FARMS ^d No. (10)						
			Value Of Agricultural Products Sold						Total Commercial Farms ^c No. (7)	Small Scale Farms ^c No. (8)	Residential And Other Small Farms ^d No. (9)								
			\$2,500- 3,749 (1)			\$5,000- 9,999 (3)								\$10,000- 24,999 (5)			\$25,000 And Over (6)		
			\$2,500- 3,749 (1)	\$3,750- 4,999 (2)	\$4,000- 9,999 (3)	\$5,000- 9,999 (4)	\$10,000- 24,999 (5)	\$15,000- 24,999 (6)											
BRANT	1961	No.	143	105	307	171	182	253	1,161	421	189	1,771							
	1966	% ^b	12.3	9.0	26.4	14.7	15.7	21.8	100.0	338	151	1,618							
		% ^b	8.9	7.6	21.9	17.4	20.6	23.7	100.0	-19.7	-20.1	-8.6							
HALDIMAND	1961	No.	256	161	404	186	57	41	1,105	779	186	2,070							
	1966	% ^b	23.2	14.6	36.7	16.8	5.2	3.7	100.0	537	174	1,937							
		% ^b	16.0	14.1	34.6	17.9	11.8	5.6	100.0	-31.1	-6.5	-6.4							
LINCOLN	1961	No.	312	220	546	236	143	108	1,565	1,260	413	3,238							
	1966	% ^b	19.9	14.1	34.9	15.1	9.1	6.9	100.0	942	439	3,130							
		% ^b	15.6	10.9	30.1	15.7	14.9	12.8	100.0	-25.2	6.3	-3.3							
WELLAND	1961	No.	131	80	206	81	54	41	593	617	284	1,494							
	1966	% ^b	22.1	13.5	34.7	13.7	9.1	6.9	100.0	518	245	1,413							
		% ^b	18.2	12.2	30.3	14.5	13.9	11.1	100.0	-16.1	-13.7	-5.4							
WENTWORTH (1)	1961	No.	227	163	414	217	138	90	1,249	769	349	2,367							
	1966	% ^b	18.2	13.1	33.1	17.4	11.0	7.2	100.0	603	327	2,110							
		% ^b	14.7	9.6	29.2	18.1	14.7	13.8	100.0	-21.6	-6.3	-10.9							
TOTAL, NIAGARA REGION	1961	No.	1,069	729	1,877	891	574	533	5,673	3,846	1,421	10,940							
	1966	% ^b	18.8	12.9	33.1	15.7	10.1	9.4	100.0	2,938	1,336	10,208							
		% ^b	14.5	10.8	29.3	16.8	15.2	13.4	100.0	-23.6	-6.0	-6.7							
NORFOLK	1961	No.	157	133	301	252	557	1,123	2,523	551	237	3,311							
	1966	% ^b	6.2	5.3	11.9	10.0	22.1	44.5	100.0	449	258	3,060							
		% ^b	5.0	4.2	11.7	9.8	23.1	46.2	100.0	-18.5	8.9	-7.6							
TOTAL, NIAGARA REGION INCLUDING NORFOLK	1961	No.	1,226	862	2,178	1,143	1,131	1,656	8,196	4,397	1,658	14,251							
	1966	% ^b	15.0	10.5	26.6	13.9	13.8	20.2	100.0	3,387	1,594	13,268							
		% ^b	11.8	9.0	24.3	14.8	17.4	22.7	100.0	-23.0	-3.9	-6.9							

TABLE 20.

VALUE OF AGRICULTURAL PRODUCTS SOLD, COUNTIES, NIAGARA REGION, 1951, 1961 AND 1966

	1951 \$	% OF Total Value 1951	1961 \$	% OF Total Value 1961	1966 \$	% OF Total Value 1966	% CHANGE	
	(1)	(2)	(3)	(4)	(5)	(6)	1966/1951 (7)	1966/1961 (8)
BRANT								
Field Crops ^a	3,587,700	36.1	10,833,550	49.5	11,315,170	40.4	215.4	4.4
Livestock	2,954,591	29.8	5,163,160	23.6	9,628,040	34.4	225.9	86.5
Fruits and Vegetables	372,779	3.8	1,016,160	4.6	1,989,180	7.1	433.6	95.8
Poultry and Eggs	878,108	8.8	1,830,440	8.4	1,502,850	5.4	71.1	-17.9
Dairy Products	2,117,058	21.3	2,973,860	13.6	3,438,410	12.3	62.4	15.6
Others	17,592	0.2	85,050	0.4	153,460	0.5	772.3	80.4
TOTAL VALUE	9,927,828	100.0	21,902,220	100.0	28,027,110	100.0	182.3	28.0
HALDIMAND								
Field Crops ^a	1,039,580	13.6	607,250	5.9	1,093,790	7.8	5.2	80.1
Livestock	2,954,919	38.6	3,528,730	34.2	5,628,700	40.1	90.5	59.5
Fruits and Vegetables	180,146	2.4	240,910	2.3	220,850	1.6	22.6	-8.3
Poultry and Eggs	1,261,313	16.5	1,799,960	17.4	1,922,850	13.7	52.4	6.8
Dairy Products	2,159,594	28.2	4,053,840	39.3	4,958,490	35.4	129.6	22.3
Others	51,815	0.7	91,990	0.9	200,970	1.4	287.9	118.5
TOTAL VALUE	7,647,367	100.0	10,322,680	100.0	14,025,650	100.0	83.4	35.9
LINCOLN								
Field Crops ^a	341,758	2.7	204,570	1.1	430,020	1.5	25.8	110.2
Livestock	1,288,401	10.0	1,630,910	8.9	3,267,110	11.7	153.6	100.3
Fruits and Vegetables	9,045,698	70.5	11,357,820	61.8	16,622,670	59.7	83.8	46.4
Poultry and Eggs	741,410	5.8	2,578,490	14.0	4,201,160	15.1	466.6	62.9
Dairy Products	1,388,777	10.8	2,525,530	13.8	3,167,320	11.4	128.1	25.4
Others	31,868	0.2	77,630	0.4	176,340	0.6	453.3	127.2
TOTAL VALUE	12,837,912	100.0	18,374,950	100.0	27,864,620	100.0	117.0	51.6
WELLAND								
Field Crops ^a	413,072	9.4	274,610	4.0	612,000	6.8	48.2	122.9
Livestock	903,839	20.6	1,098,210	16.0	1,780,870	19.7	97.0	62.2
Fruits and Vegetables	1,193,057	27.1	1,809,760	26.3	1,986,350	22.0	66.5	9.8
Poultry and Eggs	510,716	11.6	1,687,240	24.5	2,193,470	24.3	329.5	30.0
Dairy Products	1,357,305	30.9	1,859,310	27.1	2,101,630	23.3	54.8	13.0
Others	18,852	0.4	143,750	2.1	357,110	4.0	1,794.3	148.4
TOTAL VALUE	4,396,841	100.0	6,872,880	100.0	9,031,430	100.0	105.4	31.4
WENTWORTH (1)								
Field Crops ^a	863,769	8.2	1,107,360	7.2	1,644,230	8.1	-90.4	48.5
Livestock	2,972,533	28.3	3,490,720	22.8	5,420,910	26.7	82.4	55.3
Fruits and Vegetables	2,268,738	21.6	4,095,880	26.8	5,033,000	24.8	121.8	22.9
Poultry and Eggs	1,507,314	14.4	2,612,760	17.1	3,156,740	15.5	109.4	20.8
Dairy Products	2,724,997	25.9	3,694,540	24.1	3,986,390	19.6	46.3	7.9
Others	164,750	1.6	301,230	2.0	1,077,540	5.3	554.0	257.7
TOTAL VALUE	10,502,101	100.0	15,302,490	100.0	20,388,810	100.0	93.5	32.8
TOTAL, NIAGARA REGION								
Field Crops ^a	6,245,879	13.8	13,027,340	17.9	15,095,210	15.2	141.7	15.9
Livestock	11,074,283	24.4	14,911,730	20.5	25,725,630	25.9	132.3	72.5
Fruits and Vegetables	13,060,418	28.8	18,520,530	25.4	25,852,050	26.0	97.9	39.6
Poultry and Eggs	4,898,861	10.8	10,508,890	14.4	12,977,070	13.1	164.9	23.5
Dairy Products	9,747,731	21.5	15,107,080	20.8	17,652,240	17.8	81.1	16.8
Others	284,877	0.6	699,650	1.0	1,965,420	2.0	589.9	180.9
TOTAL VALUE	45,312,049	100.0	72,775,220	100.0	99,267,620	100.0	119.1	36.4
NORFOLK								
Field Crops ^a	25,856,822	81.9	50,850,670	84.3	49,521,110	81.4	91.5	-2.6
Livestock	1,654,882	5.2	2,162,750	3.6	3,529,580	5.8	113.3	63.2
Fruits and Vegetables	1,611,218	5.1	3,431,340	5.7	3,825,220	6.3	137.4	11.5
Poultry and Eggs	629,975	2.0	1,712,540	2.8	1,761,550	2.9	179.6	2.9
Dairy Products	1,724,196	5.5	2,043,450	3.4	2,013,530	3.3	16.8	-1.5
Others	91,527	0.3	106,860	0.2	175,870	0.3	92.2	64.6
TOTAL VALUE	31,568,620	100.0	60,307,610	100.0	60,826,860	100.0	92.7	0.9
TOTAL, NIAGARA REGION INCLUDING NORFOLK								
Field Crops ^a	32,102,701	41.7	63,878,010	48.0	64,616,320	40.4	101.3	1.2
Livestock	12,729,165	16.6	17,074,480	12.8	29,255,210	18.3	129.8	71.3
Fruits and Vegetables	14,671,636	19.1	21,951,870	16.5	29,677,270	18.5	102.3	35.2
Poultry and Eggs	5,528,836	7.2	12,221,430	9.2	14,738,620	9.2	166.6	20.6
Dairy Products	11,471,927	14.9	17,150,530	12.9	19,665,770	12.3	71.4	14.7
Others	376,404	0.5	806,510	0.6	2,141,290	1.3	468.9	165.5
TOTAL VALUE	76,880,669	100.0	133,082,830	100.0	160,094,480	100.0	108.2	20.3

Note: Due to rounding, percentages may not add to 100.0.

^aFigure includes tobacco.

(1)Wentworth County total does not include that part of Burlington that is in Halton County.

Source: Canada, Dominion Bureau of Statistics, Census of Canada, Agriculture, 1951, 1961 and 1966 (Ottawa: Queen's Printer), Table 28, Table 20 and Table 23.

TABLE 23.

VALUE OF MINERAL PRODUCTION BY COUNTIES, NIAGARA REGION, 1961 AND 1966

	<u>1961</u> \$ (1)	<u>1966</u> \$ (2)	<u>% Change</u> <u>1966/1961</u> (3)
BRANT	1,252,196	4,392,256	250.76
HALDIMAND	2,739,161	4,126,339	50.64
LINCOLN	2,969,844	2,176,511	-26.71
WELLAND	7,342,909	11,977,329	63.11
WENTWORTH ⁽¹⁾	4,646,147	4,777,155	2.82
TOTAL, NIAGARA REGION	18,950,257	27,449,590	44.85
NORFOLK	546,264	1,109,214	103.05
TOTAL, NIAGARA REGION INCLUDING NORFOLK	19,496,521	28,558,804	46.48

Note: Data based upon figures supplied by the Ontario Department of Mines.

(1) Wentworth County total does not include that part of Burlington that is in Halton County.

Source: Ontario Department of Treasury and Economics, Regional Development Branch.

TABLE 24

VALUE OF BUILDING PERMITS BY TYPE IN 1957, 1961 AND 1966 FOR NIAGARA REGION, COUNTIES AND SELF-GOVERNING MUNICIPALITIES

	1967					1961					1966						
	Institutional			Total Value \$ 000's (6)	Other \$ 000's (5)	Institutional			Total Value \$ 000's (12)	Institutional			Total Value \$ 000's (17)				
	Residential \$ 000's (1)	Industrial \$ 000's (2)	Commercial \$ 000's (3)			Government \$ 000's (4)	Residential \$ 000's (7)	Industrial \$ 000's (8)		Commercial \$ 000's (9)	Government \$ 000's (10)	Residential \$ 000's (13)		Industrial \$ 000's (14)	Commercial \$ 000's (15)	Government \$ 000's (16)	
BRANT	2,712	2,082	785	3,060	4	8,661	3,106	810	1,102	1,348	11	6,597	6,504	2,441	3,414	4,883	17,319
Brantford	1,816	1,536	602	2,751	4	6,703	1,671	463	874	967	1	3,978	3,465	1,203	4,453	4,353	13,161
Brantford (Township)	788	536	164	156	-	1,664	1,110	196	36	91	1	1,455	1,428	169	420	177	1,291
Burford	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	310	7	42	7	10	1,170	628	169	14	-	521
Paris	108	14	19	153	-	294	213	162	150	289	-	814	160	160	9	3	684
HALDIMAND	485	9	81	262	-	817	969	35	197	698	-	1,899	1,626	742	236	512	3,116
Dunnville	183	5	52	240	-	470	376	14	161	662	-	1,213	391	-	32	-	463
LINCOLN	9,141	855	1,859	2,291	42	14,188	7,698	865	2,762	3,979	14	15,298	22,556	4,960	2,771	7,543	37,831
Clinton	281	35	4	20	-	360	680	176	34	30	-	920	462	405	109	136	1,112
Grimsby	536	260	43	477	-	1,316	1,065	41	626	125	-	1,857	1,257	18	161	297	1,713
Grimsby, North	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	1,021	614	16	7	1,658
Louth	578	26	123	114	1	842	384	75	104	90	-	653	1,067	183	45	10	1,085
Niagara (Township)	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	459	122	55	115	5	756	1,168	231	216	132	1,447
St. Catharines	2,463	286	751	639	-	4,139	4,687	355	1,873	3,582	4	10,501	16,134	3,244	2,019	6,160	27,557
WELLAND	10,361	2,304	3,027	2,266	13	18,171	8,898	4,267	4,988	2,188	-	20,336	19,140	8,886	4,940	6,236	39,202
Bertie	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	950	86	682	7	-	1,725	1,016	17	201	636	1,870
Port Erie	465	53	29	378	-	925	596	89	97	115	-	897	799	482	212	119	1,612
Niagara Falls	185	169	768	1	-	1,123	133	280	1,429	465	-	2,307	5,580	1,824	3,200	3,357	13,661
Pelham	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	1,130	70	19	55	1,274
Port Colborne	935	612	173	275	-	1,995	584	1,638	151	18	-	2,391	3,865	637	480	331	5,313
Thorold (Town)	804	-	96	112	9	1,021	178	8	310	162	-	1,658	845	68	65	1,223	1,791
Thorold (Township)	1,069	419	65	499	-	2,052	661	134	130	80	-	1,005	425	5,024	38	2	5,409
Vainfleet	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	322	33	28	29	412
Welland	1,117	137	249	326	-	1,829	2,365	490	686	850	-	4,391	3,689	566	612	619	5,486
WENTWORTH (1)	32,026	12,846	5,628	4,299	74	56,873	19,070	8,457	6,456	9,372	29	43,384	28,014	14,067	6,368	24,912	73,381
Ancestor	3,279	63	78	365	7	3,752	973	167	654	662	-	2,256	1,707	106	65	89	1,967
Burlington	1,559	79	345	37	-	2,020	6,025	1,158	2,737	901	-	10,821	19,152	3,434	2,608	2,403	27,997
Dundas	978	128	61	17	1	1,259	1,156	181	96	377	-	1,810	1,492	114	14	179	1,999
Flamborough, East	2,179	104	336	25	5	2,667	249	37	501	-	-	787	1,146	50	11	585	1,792
Flamborough, West	1,172	17	40	110	19	1,358	998	70	84	6	11	998	1,266	236	43	166	1,711
Gloucester	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	476	-	19	25	-	520	300	-	41	689	1,030
Hamilton (City)	18,930	12,386	4,562	3,485	42	39,385	14,203	7,908	4,836	7,545	8	34,500	18,961	11,025	5,902	22,382	58,271
Salisbury	2,324	104	91	236	-	2,755	916	94	123	728	10	1,871	1,666	2,503	232	816	5,217
Stoney Creek	1,563	1	29	-	-	1,573	227	-	45	29	-	301	731	23	47	1	802
TOTAL, NIAGARA REGION	54,725	18,296	11,380	12,158	133	96,692	39,941	14,429	15,505	17,585	54	87,514	77,840	31,154	17,729	44,106	170,829
WOLFVILLE	891	655	263	549	-	2,358	2,699	412	694	511	1	4,317	2,400	2,658	475	684	6,217
Charlottetown	-	-	-	-	-	-	532	160	37	13	-	782	561	14	33	89	997
Debil	314	262	26	350	-	952	361	52	261	-	-	674	210	1	69	-	980
Middleton	-	-	-	-	-	-	126	-	69	60	-	264	186	660	65	-	953
Port Dover	93	49	20	-	-	-	162	-	9	-	-	74	135	37	53	444	663
Port Hope	19	-	-	-	-	-	26	-	-	-	-	27	24	-	-	-	38
Sharon	302	344	192	199	-	1,037	710	154	158	6	-	1,028	469	1,281	118	76	1,976
St. Leonard	-	-	-	-	-	-	239	15	86	2	-	352	172	102	-	-	1,277
Townsend	-	-	-	-	-	-	182	12	59	340	-	593	129	139	106	73	649
Waterford	163	-	18	-	-	181	182	-	-	90	1	590	481	415	24	2	922
Windsor	-	-	-	-	-	-	499	-	-	-	-	-	-	-	-	-	-
TOTAL, NIAGARA REGION INCLUDING WOLFVILLE	55,616	18,951	11,643	12,707	133	99,050	42,660	14,841	16,199	18,096	55	91,831	80,240	33,812	18,204	44,790	177,046
- B11	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
- n.a. Not available																	

(1)Unincorporated County total does not include that part of Burlington that is in Halton County.

SOURCES: Dominion Bureau of Statistics, Housing and Building Permits Section Special Tabulation 1968.

Canada, Dominion Bureau of Statistics, BUILDING PERMITS, 1957, 1961 and 1966 (Ottawa: Queen's Printer, 1958, 1962 and 1967).

TABLE 25.

PRINCIPAL STATISTICS OF THE MANUFACTURING INDUSTRIES, COUNTIES, NIAGARA REGION AND PROVINCE OF ONTARIO, 1961 TO 1966

		MANUFACTURING ACTIVITY										TOTAL ACTIVITY			
		Production And Related Workers					Cost Of		Value Of Ship-			Working Owners		Total Employees	
		Establi- ments (1)	Number (2)	Man- Hours Paid '000 (3)	Wages \$'000 (4)	Cost Of Fuel And Electricity \$'000 (5)	Cost Of Materials And Supplies Used \$'000 (6)	Manufacturing Activity \$'000 (8)	ments Of Goods Of Own Manufacture \$'000 (7)	And Partners Withdrawals \$'000 (10)	Number (9)	Number (11)	Salaries And Wages \$'000 (12)	Value Added \$'000 (13)	
BRANT	1961	231	8,099	16,593	28,582	2,061	90,761	82,903	175,927	99	362	12,165	47,805	86,779	
	1962	228	8,284	17,082	30,663	2,423	94,926	84,043	181,408	100	376	12,056	49,693	93,976	
	1963	222	9,191	18,931	36,312	2,589	111,256	102,371	212,704	92	333	12,805	55,735	118,959	
	1964	239	10,363	21,682	43,811	3,092	150,794	130,872	274,561	95	343	14,345	65,819	144,828	
	1965	236	11,245	23,255	50,130	3,305	187,823	144,781	332,587	89	358	15,252	74,257	156,142	
	1966	247	12,056	24,817	56,169	3,331	210,403	165,986	372,342	80	333	16,355	83,523	179,496	
HALDIMAND	1961	40	1,732	3,478	5,213	1,111	16,423	13,385	29,760	19	65	2,097	6,728	13,487	
	1962	38	1,929	4,068	5,935	1,650	20,850	16,576	38,867	21	69	2,322	7,761	16,782	
	1963	40	2,043	4,216	6,449	1,471	24,090	17,670	42,489	20	68	2,428	8,288	17,807	
	1964	43	2,188	4,468	7,135	1,535	26,701	21,138	50,120	21	82	2,608	9,136	21,115	
	1965	45	2,402	4,848	8,056	1,663	30,272	22,994	52,994	23	102	2,820	10,234	22,211	
	1966	46	2,432	4,992	8,872	1,787	33,308	22,579	56,653	23	90	2,889	11,275	22,861	
LINCOLN	1961	223	10,167	20,672	41,881	4,331	103,924	104,242	208,944	114	393	13,411	59,522	106,265	
	1962	224	10,210	22,084	47,968	4,583	120,002	119,718	242,856	114	401	13,443	66,469	123,554	
	1963	225	11,389	24,969	56,425	4,931	143,719	145,277	290,990	100	384	14,828	76,957	146,767	
	1964	221	12,911	28,463	67,001	5,188	163,261	162,049	323,362	98	373	16,487	90,847	164,223	
	1965	223	14,487	32,761	87,499	5,905	209,519	191,569	406,586	106	415	18,394	116,140	194,368	
	1966	223	14,907	31,263	85,165	6,551	194,173	186,740	383,112	101	435	19,219	115,602	190,727	
WELLAND	1961	283	17,450	37,030	82,508	21,065	224,767	215,066	461,340	118	413	22,926	114,421	219,603	
	1962	282	18,049	38,270	89,180	23,232	245,087	227,943	490,297	118	431	23,703	123,356	232,393	
	1963	285	17,567	37,553	89,589	22,491	268,062	238,103	530,720	109	419	23,435	125,711	242,245	
	1964	287	18,603	40,365	97,617	24,413	300,634	269,570	587,122	102	397	24,463	135,362	274,079	
	1965	276	19,414	41,878	106,461	26,107	304,205	291,470	621,190	86	366	25,722	147,872	296,531	
	1966	271	20,641	44,208	118,843	27,982	329,198	300,089	652,647	83	341	27,034	162,774	306,191	
WENTWORTH (1)	1961	629	39,183	82,697	181,261	25,737	532,583	550,828	1,115,405	282	1,179	53,460	264,671	560,380	
	1962	644	42,214	89,112	201,251	27,633	598,491	613,569	1,224,479	316	1,214	56,405	287,804	623,466	
	1963	622	43,880	92,220	213,028	30,405	641,155	665,824	1,328,255	289	1,158	58,747	304,038	677,830	
	1964	632	47,341	100,641	244,538	34,170	741,067	744,925	1,517,423	282	1,210	62,033	338,539	758,467	
	1965	622	50,223	106,153	270,881	38,181	822,633	838,073	1,675,383	252	1,182	65,475	372,421	849,864	
	1966	630	52,075	109,394	292,382	40,419	828,349	869,703	1,723,684	238	1,125	67,287	399,770	883,463	
TOTAL, NIAGARA REGION	1961	1,406	76,631	160,470	339,445	54,845	968,458	966,424	1,991,376	632	2,412	104,059	493,147	986,214	
	1962	1,416	80,691	170,616	375,017	59,521	1,079,356	1,061,849	2,177,907	669	2,491	107,929	535,083	1,090,171	
	1963	1,394	84,070	177,891	401,803	61,887	1,188,282	1,169,245	2,405,158	610	2,362	112,242	570,729	1,203,608	
	1964	1,422	91,406	195,619	461,004	68,398	1,382,457	1,328,554	2,752,588	598	2,405	119,936	639,703	1,363,212	
	1965	1,402	97,771	208,895	523,027	75,161	1,554,452	1,487,860	3,088,740	556	2,423	127,667	720,924	1,511,116	
	1966	1,417	102,111	214,674	561,431	80,670	1,595,431	1,545,097	3,188,438	525	2,324	132,784	772,944	1,582,738	
NORFOLK	1961	83	1,845	4,020	6,528	772	58,125	22,762	80,645	43	223	2,451	9,468	23,124	
	1962	84	2,163	4,525	7,734	901	62,564	23,230	88,363	43	207	2,747	10,766	23,458	
	1963	81	2,183	4,630	7,984	900	65,104	27,292	93,829	43	248	2,790	11,231	27,783	
	1964	85	2,389	5,019	8,928	945	78,311	31,543	106,477	42	206	3,059	12,692	33,238	
	1965	84	2,525	5,168	9,664	985	77,227	37,883	115,559	35	197	3,187	13,546	38,964	
	1966	85	2,576	5,494	10,978	1,059	116,475	36,184	154,048	34	208	3,274	15,208	37,175	
TOTAL, NIAGARA REGION INCLUDING NORFOLK	1961	1,489	78,476	164,490	345,973	55,617	1,026,583	989,186	2,070,021	675	2,635	106,510	502,615	1,099,338	
	1962	1,500	82,854	175,141	382,751	60,422	1,141,620	1,085,079	2,266,270	712	2,698	110,676	545,849	1,137,629	
	1963	1,475	86,253	182,521	409,787	62,787	1,253,386	1,196,537	2,498,987	653	2,910	115,033	581,960	1,231,391	
	1964	1,507	93,795	200,638	469,932	69,363	1,460,768	1,389,065	2,859,065	640	2,611	122,995	632,395	1,396,650	

PRINCIPAL STATISTICS OF THE MANUFACTURING INDUSTRIES, COUNTIES, NIAGARA REGION AND PROVINCE OF ONTARIO, 1961 TO 1966 (Continued)

TOTAL, PROVINCE OF ONTARIO		MANUFACTURING ACTIVITY										TOTAL ACTIVITY		
		Production And Related Workers				Cost Of		Value of Ship-		Working Owners		Total Employees		Value Added \$'000 (13)
		Estab- lish- ments (1)	Number (2)	Nan- Hours Paid '000 (3)	Wages \$'000 (4)	Cost Of Fuel And Electricity \$'000 (5)	Materials And Supplies Used \$'000 (6)	ments Of Goods Of Own Manufacture \$'000 (7)	Value Added - Manufacturing Activity \$'000 (8)	And Partners Withdrawals \$'000 (10)	Number (9)	Number (11)		
1961	12,419	433,059	912,762	1,739,097	237,405	6,129,239	11,563,734	5,244,846	5,473	22,157	638,757	2,859,652	5,553,191	
1962	12,585	456,026	968,220	1,908,474	249,459	6,944,729	12,919,454	5,815,088	6,044	23,115	662,533	3,078,549	6,149,611	
1963	12,489	478,370	1,019,058	2,080,555	260,511	7,745,076	14,262,208	6,369,483	5,726	22,999	690,470	3,335,582	6,729,111	
1964	12,781	519,758	1,092,937	2,320,944	283,965	8,627,975	15,842,949	7,066,985	5,065	23,591	728,936	3,666,810	7,489,116	
1965	12,766	543,501	1,163,850	2,615,719	314,290	9,668,876	17,675,865	7,881,825	5,308	23,738	774,428	4,100,212	8,421,721	
1966	12,986	578,559	1,232,025	2,912,675	339,748	10,712,883	19,452,570	8,648,180	5,101	24,304	820,465	4,571,961	9,209,568	

(1)Wentworth County total does not include that part of Burlington that is in Halton County.

Sources: Canada, Dominion Bureau of Statistics, Census of Manufacturing Industries of Canada, 1964, (Ottawa: Queen's Printer, 1964), Section V, Geographical Distribution
Canada, Dominion Bureau of Statistics, Annual Census of Manufactures, Preliminary Bulletin, 1966.

TABLE 26.

RETAIL TRADE, SALES, PER CAPITA SALES, STORES AND EMPLOYEES, COUNTIES AND INCORPORATED PLACES OF 5,000 POPULATION AND OVER, NIAGARA REGION, 1951, 1961 AND 1966

	SALES				PER CAPITA SALES						
	1951	1961	1966	% Change	1951	1961	1966	% Change	1966/1951	% Change	% Change
	\$000's (1)	\$000's (2)	\$000's (3)	1961/1951 (4)	\$ (7)	\$ (8)	\$ (9)	1961/1951 (10)	1966/1951 (11)	1966/1951 (12)	1966/1951 (12)
BRANT	53,950.9	76,382.3	108,224.5	41.6	741	911	1,190	22.9	30.6	60.6	60.6
Brantford ^{a,b}	43,617.4	63,181.3	84,302.1	44.9	1,188	1,145	1,408	-3.6	23.0	18.5	18.5
Paris ^{a,b}	5,079.0	4,613.9	5,599.1	-9.2	968	793	893	-18.1	12.6	-7.7	-7.7
HALDIMAND	15,400.9	21,571.5	30,939.2	40.1	638	765	1,031	19.9	34.8	61.6	61.6
Bunnville ^a	6,817.9	8,428.9	11,767.3	23.6	1,523	1,627	2,178	6.8	33.9	43.0	43.0
LINCOLN	72,012.0	116,225.4	187,394.5	61.4	806	918	1,283	13.9	39.8	59.2	59.2
Grimsby ^a	4,950.4	7,391.4	13,347.4	49.3	1,785	1,436	2,012	-19.6	40.1	12.7	12.7
St. Catharines ^a	54,026.6	93,309.1	153,038.5	72.7	1,422	1,105	1,576	-22.3	42.6	10.8	10.8
WELLAND	96,731.1	143,647.1	199,000.9	48.5	785	872	1,113	11.1	27.6	41.8	41.8
Fort Erie ^a	7,063.4	10,738.7	16,453.2	52.0	933	1,190	1,680	27.5	41.2	80.1	80.1
Niagara Falls ^a	34,355.7	40,349.0	75,857.3	17.4	1,502	1,805	1,333	20.2	-26.1	-11.3	-11.3
Port Colborne ^{a,b}	9,586.4	16,497.9	22,059.2	72.1	1,158	1,108	1,226	-4.3	10.6	5.9	5.9
Thorold	4,074.6	5,796.0	7,057.8	24.0	731	671	798	-8.2	18.9	9.2	9.2
Welland ^a	21,144.4	39,033.1	56,105.9	76.3	1,440	1,082	1,404	-24.9	29.8	-2.5	-2.5
WENTWORTH ^{b,d}	22,440.2	35,460.8	512,083.7	62.9	843	1,016	1,344	20.8	27.6	54.1	54.1
Burlington ^{a,b,c}	7,551.7	40,284.9	71,341.3	433.5	1,255	857	1,344	-31.7	26.3	-13.8	-13.8
Dundas ^a	6,444.2	13,346.2	17,554.6	107.1	941	1,000	1,132	9.9	9.5	20.3	20.3
Hamilton ^{a,b}	20,400.7	113,246.5	433,780.5	52.5	986	1,143	1,400	15.9	27.3	-7.0	-7.0
Stoney Creek ^a	2,214.3	7,337.9	7,985.4	231.4	1,152	1,214	1,102	5.4	-9.2	-4.3	-4.3
TOTAL, NIAGARA REGION	402,501.7	723,287.1	1,037,642.8	56.4	803	949	1,235	18.2	30.1	53.8	53.8
NORFOLK	25,955.4	43,761.4	54,016.2	68.6	608	867	1,068	42.6	23.2	75.7	75.7
Simcoe ^{a,b}	13,177.5	18,950.2	23,704.3	43.8	1,813	2,165	2,387	19.4	10.3	31.7	31.7
TOTAL, NIAGARA REGION INCLUDING NORFOLK	488,457.1	767,048.5	1,091,659.0	57.0	790	944	1,226	19.5	29.9	55.2	55.2
TOTAL, PROVINCE OF ONTARIO	3,666,371.4	6,206,684.5	8,634,073.7	69.3	797	995	1,240	24.8	24.6	55.6	55.6

	STORES				EMPLOYEES			
	1961		1966		1961		1961	
	No.	(14)	No.	(15)	% Change 1961/1951	(16)	% Change 1966/1951	(18)
	(13)				% Change 1966/1961	(17)	% Change 1961/1951	(21)
BRANT	696	717	663	663	-7.5		2,509	2,818
Brantford ^{a,b}	445	483	449	449	-7.0		2,146	2,457
Paris ^{a,b}	80	80	64	64	-20.0		197	157
HALDIMAND	301	325	291	291	-10.5		561	688
Dunnville ^a	98	95	82	82	-13.7		284	301
LINCOLN	844	1,119	1,099	1,099	-1.8		3,239	4,409
Grimsby ^a	48	64	71	71	10.9		177	224
St. Catharines ^a	482	788	773	773	-1.9		2,520	3,745
WELLAND	1,397	1,545	1,468	1,468	-5.0		4,450	4,660
Fort Erie ^a	95	102	95	95	-6.9		270	324
Niagara Falls ^a	359	339	503	503	48.4		1,870	1,478
Port Colborne ^{a,b}	129	179	166	166	-7.3		446	557
Thorold	78	82	67	67	-18.3		199	164
Welland ^a	207	376	341	341	-9.8		932	1,278
WENTWORTH ^{b,d}	2,421	2,759	2,383	2,383	-2.8		11,733	14,919
Eurlington ^{a,b,c}	83	263	297	297	12.9		500	1,283
Dundas ^a	77	102	101	101	-1.0		287	568
Hamilton ^{a,b}	2,095	2,277	2,190	2,190	-3.8		10,905	13,167
Stoney Creek ^a	27	37	37	37	-		121	238
TOTAL, NIAGARA REGION	5,701	6,465	6,204	6,204	-4.0		22,512	27,494
NORFOLK	536	561	508	508	-9.4		1,019	1,303
Simcoe ^{a,b}	151	163	140	140	-14.1		582	695
TOTAL, NIAGARA REGION INCLUDING NORFOLK	6,237	7,026	6,712	6,712	-4.5		23,531	28,797
ONTARIO PROVINCE OTHER	43,077	52,157	51,119	51,119	-2.0		187,819	233,563
								24.4

*All data (column 19) adjusted to allow for changes in Standard Industrial Classification between 1951 and 1961.
(Classification changes, 1951 to 1961)

Restaurants, caterers, cocktail lounges, taverns, dressmakers - from Retail to Service.

Automotive repair shops (several kinds), radio and I.V. repair shops, jewellery repair and engraving, bicycle repair - from Service to Retail.

- Nil

^aNot strictly comparable due to boundary changes between 1951 and 1961.

^bNot strictly comparable due to boundary changes between 1961 and 1966.

^cIncludes that part of Burlington which is in Wentworth County.

^dDoes not include that part of Burlington which is in Wentworth County.

Sources:

Canada, Dominion Bureau of Statistics, Census of Canada, Retail Trade, 1951 and 1961 (Ottawa: Queen's Printer), Table 8, and Tables

Canada, Dominion Bureau of Statistics, Census of Canada, Advance Bulletin of Retail Trade, 1966.

Canada, Dominion Bureau of Statistics, Census of Canada, Unpublished data on Retail Trade, 1966.

TABLE 27.

WHOLESALE TRADE, SALES, PER CAPITA SALES, LOCATIONS AND EMPLOYEES, COUNTIES AND INCORPORATED PLACES OF 5,000 POPULATION AND OVER, NIAGARA REGION, 1951 AND 1961

	SALES			PER CAPITA SALES			LOCATIONS			EMPLOYEES		
	1951*	1961	Change	1951	1961	Change	1951	1961	Change	1951**	1961	Change
	\$000's (1)	\$000's (2)	1961/1951 (3)	\$ (4)	\$ (5)	1961/1951 (6)	No. (7)	No. (8)	1961/1951 (9)	No. (10)	No. (11)	1961/1951 (12)
BRANT	33,159.2	46,660.1	40.7	455	557	22.4	123	122	-0.8	658	826	25.5
Brantford ^a	30,649.7	30,763.8	0.4	835	557	-33.3	n.a.	82	n.a.	616	613	-0.5
Paris ^a	n.a.	4,047.2	n.a.	n.a.	695	n.a.	n.a.	6	n.a.	n.a.	79	n.a.
HALDIMAND	9,631.2	9,926.1	3.1	399	352	-11.8	70	72	29	202	215	6.4
Dunnville ^a	n.a.	2,140.6	n.a.	n.a.	413	n.a.	n.a.	13	n.a.	n.a.	44	n.a.
LINCOLN	40,997.5	49,481.3	20.7	459	391	-14.8	132	165	25.0	841	1,059	25.9
Grimsby ^a	n.a.	2,277.7	n.a.	n.a.	442	n.a.	n.a.	7	n.a.	n.a.	64	n.a.
St. Catharines ^a	29,222.8	36,311.2	24.3	769	430	-44.1	n.a.	96	n.a.	494	830	68.0
WELLAND	41,901.1	52,489.0	25.3	340	319	-6.2	151	177	17.2	721	1,055	46.3
Fort Erie ^a	531.4	1,884.9	254.7	70	209	198.6	n.a.	10	n.a.	8	48	500.0
Niagara Falls	15,321.6	19,607.2	28.0	670	877	30.9	n.a.	32	n.a.	313	330	5.4
Port Colborne ^a	5,277.3	6,443.0	22.1	638	433	-32.1	n.a.	21	n.a.	122	133	9.0
Thorold	1,890.9	306.1	-83.8	296	36	-87.8	n.a.	3	n.a.	20	4	-80.0
Welland ^a	4,808.2	11,146.5	131.8	313	309	-1.3	n.a.	39	n.a.	104	208	100.0
WENTWORTH (1)	284,132.3	346,179.0	21.8	1,068	965	-9.6	406	492	21.2	4,922	5,464	11.0
Burlington ^a	n.a.	15,311.9	n.a.	n.a.	326	n.a.	n.a.	43	n.a.	n.a.	248	n.a.
Dundas ^a	n.a.	3,578.8	n.a.	n.a.	277	n.a.	n.a.	15	n.a.	n.a.	75	n.a.
Hamilton ^a	276,813.0	314,399.1	13.6	1,329	1,147	-13.7	n.a.	390	n.a.	4,741	4,992	5.3
Stoney Creek ^a	n.a.	7,856.4	n.a.	n.a.	1,300	n.a.	n.a.	6	n.a.	n.a.	117	n.a.
TOTAL, NIAGARA REGION	409,821.3	504,735.5	23.2	712	662	-7.0	882	1,028	16.6	7,344	8,619	17.4
NORFOLK	13,875.8	59,317.6	327.5	325	1,175	261.5	74	103	39.2	221	728	229.4
Simcoe ^a	10,710.7	10,968.6	2.4	1,473	1,253	-14.9	n.a.	30	n.a.	184	200	8.7
TOTAL, NIAGARA REGION INCLUDING NORFOLK	423,697.1	564,053.1	33.1	685	694	1.3	956	1,131	18.3	7,565	9,347	23.6
TOTAL, PROVINCE OF ONTARIO	4,647,484.0	6,126,188.0	31.8	1,011	982	-2.9	8,333	10,105	21.3	71,391	90,346	26.6

n.a. Not available.

^aNot strictly comparable due to boundary changes between 1951 and 1961.

(1)Wentworth County total does not include that part of Burlington that is in Halton County.

*Data (column 1) for incorporated places of 5,000 population and over, have been adjusted by the Regional Development Research Section to allow for changes in Standard Industrial Classification between 1951 and 1961.

**All data (column 10) adjusted to allow for changes in Standard Industrial Classification between 1951 and 1961.

Classification changes 1951 to 1961: Lumber and building, material dealers, farm implement dealers, feed stores, farm supply stores, harness shops - from Retail to Wholesale

Source: Canada, Dominion Bureau of Statistics, Census of Canada, Wholesale Trade, 1951 and 1961 (Ottawa: Queen's Printer), Table 5, Table 7 and Table 8.

TABLE 28.

SERVICE TRADES, RECEIPTS, PER CAPITA RECEIPTS, LOCATIONS AND EMPLOYEES, COUNTIES AND INCORPORATED PLACES OF 5,000 POPULATION AND OVER, NIAGARA REGION, 1951 and 1961

	RECEIPTS			PER CAPITA RECEIPTS			LOCATIONS			EMPLOYEES		
	1951	1961	% Change	1951	1961	% Change	1951	1961	% Change	1951*	1961	% Change
	\$000's (1)	\$000's (2)	1961/1951 (3)	\$ (4)	\$ (5)	1961/1951 (6)	No. (7)	No. (8)	1961/1951 (9)	No. (10)	No. (11)	1961/1951 (12)
BRANT	6,318.8	11,430.5	80.9	87	136	56.3	294	432	46.9	947	1,460	54.2
Brantford ^a	5,286.4	8,815.4	66.8	144	160	11.1	212	304	43.4	819	1,226	49.7
Paris ^a	433.8	560.5	26.3	85	96	12.9	28	34	21.4	75	60	-20.0
HALDIMAND	1,680.3	2,428.9	44.6	70	86	22.9	123	160	30.1	256	255	-0.4
Dunnville ^a	707.7	1,026.6	45.1	158	198	25.3	43	46	7.0	97	108	11.3
LINCOLN	9,223.6	18,495.0	100.5	103	146	41.7	421	619	47.0	1,640	2,107	28.5
Grimsby ^a	471.4	694.2	47.3	170	135	-20.6	21	30	42.9	95	104	9.5
St. Catharines ^a	6,132.0	13,834.6	125.6	161	164	1.9	215	446	107.4	1,065	1,652	55.1
WELLAND	17,380.1	35,699.1	105.4	141	217	53.9	803	1,069	33.1	2,728	2,902	6.4
Fort Erie ^a	1,050.4	2,257.5	114.9	139	250	79.9	62	68	9.7	170	205	20.6
Niagara Falls	6,915.0	11,269.0	63.0	302	504	66.9	200	230	15.0	1,068	1,031	-3.5
Port Colborne ^a	789.1	2,240.3	183.9	95	150	57.9	50	96	92.0	107	208	94.4
Thorold	717.2	1,017.2	41.8	112	118	5.4	43	50	16.3	76	80	5.3
Welland ^a	2,493.3	4,513.0	81.0	162	125	-22.8	102	180	76.5	366	498	36.1
WENTWORTH(1)	36,170.6	63,455.2	75.4	136	177	30.1	1,267	1,785	40.9	6,122	7,263	18.6
Burlington ^a	878.4	5,955.6	578.0	146	127	-13.0	34	143	320.6	133	610	358.6
Dundas ^a	743.8	1,233.4	65.8	109	96	-11.9	35	48	37.1	111	154	38.7
Hamilton ^a	31,811.4	55,611.9	74.8	153	203	32.7	1,106	1,526	38.0	5,522	6,380	15.5
Stoney Creek ^a	394.0	1,150.3	192.0	205	190	-7.3	11	28	154.5	126	187	48.4
TOTAL, NIAGARA REGION	70,773.4	131,508.7	85.8	123	173	40.7	2,908	4,065	39.8	11,693	13,987	19.6
NORFOLK	3,694.3	5,470.8	48.1	87	108	24.1	202	272	34.7	440	522	18.6
Simcoe ^a	1,949.2	2,291.9	17.6	268	262	-2.2	62	81	30.6	220	253	15.0
TOTAL, NIAGARA REGION INCLUDING NORFOLK	74,467.7	136,979.5	83.9	120	169	40.8	3,110	4,337	39.5	12,133	14,509	19.6
TOTAL, PROVINCE OF ONTARIO	573,292.9	1,175,641.8	105.1	125	189	51.2	22,126	32,014	44.7	91,392	125,263	37.1

*All data (column 10) adjusted to allow for changes in Standard Industrial Classification between 1951 and 1961.

Classification changes 1951 to 1961.

- Restaurants, caterers, cocktail lounges, taverns, dressmakers - from Retail to Service.
- Automotive repair shops (several kinds), radio and T.V. repair shops, jewellery repair and engraving, bicycle repair - from Service to Retail.
- Dental laboratories, electro-plating, machine shops, upholstery shops - from Service to Manufacturing.

^aNot strictly comparable due to boundary changes between 1951 and 1961.

(1)Wentworth County total does not include that part of Burlington that is in Halton County.

Source: Canada, Dominion Bureau of Statistics, Census of Canada, Service Trades, 1951 and 1961 (Ottawa: Queen's Printer), Table 23, Table 31 and Table 33.

TABLE 29.

DENTAL SERVICES BY COUNTIES, NIAGARA REGION AND PROVINCE OF ONTARIO, 1966 AND 1968

	1966	1966		1968	
	POPULATION	DENTISTS		DENTISTS	
	No. (1)	No. (2)	Ratio 1/ (3)	No. (4)	Ratio (5)
BRANT	90,945	31	2,934	29	3,266
HALDIMAND	30,020	7	4,289	6	5,183
LINCOLN	146,099	53	2,757	61	2,544
WELLAND	178,818	50	3,576	53	3,523
WENTWORTH ⁽¹⁾	394,299	151	2,611	176	2,261
TOTAL, NIAGARA REGION	840,181	292	2,877	325	2,663
NORFOLK	50,578	13	3,891	17	3,076
TOTAL, NIAGARA REGION INCLUDING NORFOLK	890,759	305	2,921	342	2,684
TOTAL, PROVINCE OF ONTARIO	6,960,870	2,616	2,661	2,905	2,515

^aRatio calculated using population estimates supplied by Research and Planning Branch, Ontario Department of Health.

(1) Wentworth County total does not include that part of Burlington that is in Halton County.

Sources: Canada, Dominion Bureau of Statistics, Census of Canada, Population, 1966, (Ottawa: Queen's Printer), Table 9.
Proceedings of The Royal College of Dental Surgeons of Ontario, 1966 and 1968.

TABLE 30.

DOCTORS IN THE NIAGARA REGION BY COUNTIES AND CENTRES OF 1,000 POPULATION AND OVER,
1966 AND 1968

	POPULATION	DOCTORS		POPULATION/ DOCTOR
	1966	1966	1968	1966
	No. (1)	No. (2)	No. (3)	No. (4)
BRANT				
Brantford	59,854	88	88	680
Paris	6,271	6	4	1,045
TOTAL, BRANT COUNTY	90,945	102	103	892
HALDIMAND				
Caledonia	2,725	3	4	908
Cayuga	1,031	3	3	344
Dunnville	5,402	12	12	450
Hagersville	2,169	4	3	542
TOTAL, HALDIMAND COUNTY	30,020	23	23	1,305
LINCOLN				
Beamsville	3,886	3	3	1,925
Grimsby	6,634	14	16	474
Niagara-on-the-Lake	3,113	2	2	1,557
St. Catharines	97,101	152	154	639
TOTAL, LINCOLN COUNTY	146,099	184	187	794
WELLAND				
Chippawa	3,877	5	4	775
Crystal Beach	1,857	-	-	-
Fonthill	2,790	4	6	698
Fort Erie	9,793	10	8	979
Niagara Falls	56,891	71	71	801
Port Colborne	17,986	22	20	818
Thorold	8,843	13	13	680
Welland	39,960	42	53	951
TOTAL, WELLAND COUNTY	178,818	177	186	1,010
WENTWORTH ¹				
Burlington	65,941	89	107	741
Dundas	15,501	14	14	1,107
Hamilton	298,121	482	514	619
Stoney Creek	7,243	16	16	453
Waterdown	1,935	3	3	645
TOTAL, WENTWORTH COUNTY	394,299	544	568	725
TOTAL, WENTWORTH COUNTY INCLUDING BURLINGTON	449,116	633	675	710
TOTAL, NIAGARA REGION	840,181	1,030	1,067	816
NORFOLK				
Delhi	3,503	4	4	876
Port Dover	3,220	4	3	805
Simcoe	9,929	19	19	523
Waterford	2,379	2	3	1,190
TOTAL, NORFOLK COUNTY	50,578	33	31	1,533
TOTAL, NIAGARA REGION INCLUDING NORFOLK	890,759	1,063	1,098	2,349
TOTAL, PROVINCE OF ONTARIO - Nil	6,960,870	9,174	9,669	759

¹Includes that part of Burlington that is in Halton County.

Sources: Canada, Dominion Bureau of Statistics, Census of Canada, Population, (Ottawa: Queen's Printer), Table 9.
Canadian Medical Directory, 1967, Seccombe House, 1967.
Canadian Medical Directory, 1969, Seccombe House, 1969.

TABLE 31.

HOSPITAL SERVICES, HOSPITALS AND RATED BEDS, BY URBAN CENTRE AND COUNTY, NIAGARA REGION AND PROVINCE OF ONTARIO, 1966 AND 1969

	Population No. (1)	Hospitals No. (2)	1966					1969					
			RATED BEDS ¹					RATED BEDS ²					
			Total No. (3)	Active No. (4)	Psychiatric No. (5)	Chronic No. (6)	Convalescent No. (7)	Hospitals No. (8)	Total No. (9)	Active No. (10)	Psychiatric No. (11)	Chronic No. (12)	Convalescent No. (13)
BRANT													
Brantford	59,854	5	728 ³	591	36	101	-	5	728 ³	591	36	101	-
Paris	6,271	1	61	61	-	-	-	1	61	61	-	-	-
Total	90,945	6	789	652	36	101	-	6	789	652	36	101	-
HALDIMAND													
Dunnville	5,402	1	80	80	-	-	-	1	80	80	-	-	-
Hagersville	2,169	1	56	41	-	15	-	1	80	62	-	18	-
Total	30,020	2	136	121	-	15	-	2	160	142	-	18	-
LINCOLN													
Grimsby	6,634	1	58	58	-	-	-	1	116 ⁴	116	-	-	-
Niagara-on-the-Lake	3,113	1	34	34	-	-	-	1	34	34	-	-	-
St. Catharines	97,101	3	849	727	22	100	-	3	880	736	53	91	-
Virgilia	902	1	10	10	-	-	-	1	10	10	-	-	-
Total	146,099	6	951	829	22	100	-	6	1,040	896	53	91	-
WELLAND													
Fort Erie	9,793	1	65	65	-	-	-	1	95	75	-	20	-
Niagara Falls	56,891	1	305	305	-	-	-	1	399	305	36	58	-
Port Colborne	17,986	1	152	152	-	-	-	1	152	152	-	-	-
Thorold	8,843	1	29	-	-	29	-	1	29	-	-	29	-
Welland	39,960	1	341	259	-	82	-	1	341	259	-	82	-
Total	178,818	5	892	781	-	111	-	5	1,016	791	36	189	-
WENTWORTH													
Burlington	65,941	1	228	228	-	-	-	1	228	228	-	-	-
Hamilton	298,121	6 ⁵	2,841	2,190	69	411	171	6 ⁵	2,832	2,188	69	367	208
Total	394,299 ⁶	7	3,069	2,418	69	411	171	7	3,060	2,416	69	367	208
TOTAL, NIAGARA REGION	840,181	26	5,837	4,801	127	738	171	26	6,065	4,897	194	766	208
NORFOLK													
Simcoe	9,929	1	153	153	-	-	-	1	215	181	-	34	-
Total	50,578	1	153	153	-	-	-	1	215	181	-	34	-
TOTAL, NIAGARA REGION INCLUDING NORFOLK	890,759	27	5,990	4,954	127	738	171	27	6,280	5,078	194	800	208
TOTAL, PROVINCE OF ONTARIO	6,960,870	272	44,607	36,043	931	6,502	1,131	278	46,786	37,099	1,380	7,165	1,142

- Nil

¹As of December 31, 1966.²As of April 15, 1969.³No breakdown available for Rated Beds at Lady Willingdon Indian Hospital. All 25 beds assigned to Active Bed category.⁴Excluding 15 beds in Kileen Lodge Nursing Home, Grimsby.⁵H.A. Brow Infirmary is included with Chedoke General Hospital.⁶Excludes that part of Burlington that is in Halton County.⁷Medical Centre.Sources: Ontario Hospital Services Commission, 1966 Annual Report, Statistical Supplement.
Ontario Hospital Services Commission, Special Tabulation, April, 1969.

TABLE 32.

ONTARIO FEDERATION OF SYMPHONY ORCHESTRAS, AUDIENCE POTENTIAL AND CAPACITY, SELECTED URBAN CENTRES, NIAGARA REGION AND PROVINCE OF ONTARIO, 1968

	ORCHESTRAS		Nature Of Facility Used For Performances	Population 1966 No.	Seating Capacity No.	Persons Per Seating Unit No.	Average Audience Size No.
	No. (1)	Title (2)					
BRANTFORD	1	Brantford Symphony	Cinema	59,854	1,200	50	1,200
HAMILTON ¹	1	Hamilton Philharmonic	Cinema	298,121	2,000	149	1,550
NIAGARA	1	Niagara Symphony	High School	3,113	1,114	3	650
ST. CATHARINES	1	St. Catharines Symphony	Cinema	97,101	930	104	815
TOTAL, NIAGARA REGION	4			840,181	5,244	160	1,054
TOTAL, PROVINCE OF ONTARIO	21			6,960,870	19,265	361	820

¹Projected future facilities consist of \$19.1 million Arts Complex.

Source: Ontario Council for the Arts, Special Tabulation, 1968.

TABLE 33

MUSEUM SERVICES IN THE NIAGARA REGION, 1966

	POPULATION 1966 (1)	NUMBER AND TYPE OF MUSEUM					MUSEUM ACTIVITIES				
		History (2)	Science (3)	Art (4)	Combination (5)	Guided Tours (6)	Films And Lectures (7)	Inter-museum Loans And Circulating Exhibitions (8)	Education Programs (9)	Other (10)	
BRANT	59,854	2	-	-	-	X	X	-	X	Art Festivals Concerts	
Brantford	260	1	-	-	-	-	-	-	-	-	
Oakland	6,271	1	-	1	-	-	-	-	-	-	
Paris											
TOTAL, BRANT COUNTY	90,945	4		1	-	-	-	-	-	-	
HALDIMAND											
Cayuga	1,031	1	-	-	-	-	-	-	-	-	
TOTAL, HALDIMAND COUNTY	30,020	1	-	-	-	-	-	-	-	-	
LINCOLN											
Grimsby	6,634	1	-	-	-	X	-	-	X	-	
Jordan	210	2	-	-	-	-	-	-	-	-	
Niagara-on-the-Lake	3,113	1	-	-	-	X	-	-	X	-	
St. Catharines	97,101	3	-	-	-	X	X	X	X	Art Festivals Concerts	
TOTAL, LINCOLN COUNTY	146,099	7	-	-	-	-	-	-	-	-	
WELLAND											
Fort Erie	9,793	1	-	-	-	-	-	-	-	-	
Niagara Falls	56,891	3	1	1	1	X	-	-	X	-	
TOTAL, WELLAND COUNTY	178,818	4	1	1	1	-	-	-	-	-	
WENTWORTH											
Burlington	65,941	1	-	-	-	-	-	-	-	-	
Dundas	15,501	1	-	-	1	X	-	-	-	-	
Hamilton	298,121	1	1	-	-	X	-	-	X	-	
Rockton	115	-	-	-	1	X	-	-	-	-	
Stoney Creek	7,243	1	-	-	-	-	-	-	-	-	
TOTAL, WENTWORTH COUNTY	394,299	3	1	-	2	-	-	-	-	-	
TOTAL, WENTWORTH COUNTY INCLUDING BURLINGTON	460,240	4	1	-	2	-	-	-	-	-	
NORFOLK											
Simcoe	9,929	1	-	-	-	-	-	-	-	-	
- Nil											
- Museum activities.											

Source: Museum Directory of United States and Canada.

TABLE 34.

THEATRICAL FACILITIES BY TYPE, SELECTED URBAN CENTRES, NIAGARA REGION AND PROVINCE OF ONTARIO, 1967

	Population 1966		Persons Per Seating Unit		Theatres		Civic Auditoriums, Arenas etc.		High School Auditoriums		University Theatres, Auditoriums	
	No. (1)	No. (2)	No. (3)	No. (4)	No. (5)	No. (6)	No. (7)	No. (8)	No. (9)	No. (10)	No. (11)	No. (12)
BRANTFORD	59,854	A 9	1 1,200	1 3,000	3	-	-	-	-	-	-	-
BURLINGTON	65,941	A 60	- -	- -	2 1,108	-	-	-	-	-	-	-
HAMILTON	298,121	A 40	1 2,000	- -	4 3,401	1 2,000	-	-	-	-	-	-
NIAGARA FALLS	56,891	A 8	2 1,075	1 3,200	4 3,166	1 2,000	-	-	-	-	-	-
ST. CATHARINES	97,101	A 13	1 996	1 3,107	4 3,146	1 2,000	-	-	-	-	-	-
SIMCOE	9,929	A 3	- -	2 2,650	1 1,000	-	-	-	-	-	-	-
VINELAND	1,187	A 1	1 1,108	- -	- -	-	-	-	-	-	-	-
WELLAND	39,960	A 4	1 1,200	2 3,800	2 4,944	-	-	-	-	-	-	-
TOTAL, NIAGARA REGION INCLUDING NORFOLK ⁽¹⁾	945,576	A 84	7 7,579	7 15,757	20 18,920	1 2,000	-	-	-	-	-	-
TOTAL, PROVINCE OF ONTARIO	6,960,870	A 29	36 44,661	50 89,814	170 130,208	12 19,167	-	-	-	-	-	-

(1) Includes the town of Burlington.

A - Number of facilities.

B - Seating capacity.

- Nil

Sources: Canadian Theatre Centre, Special Tabulation, 1961 and 1967.
National Arts Centre, Special Tabulation, 1967.

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